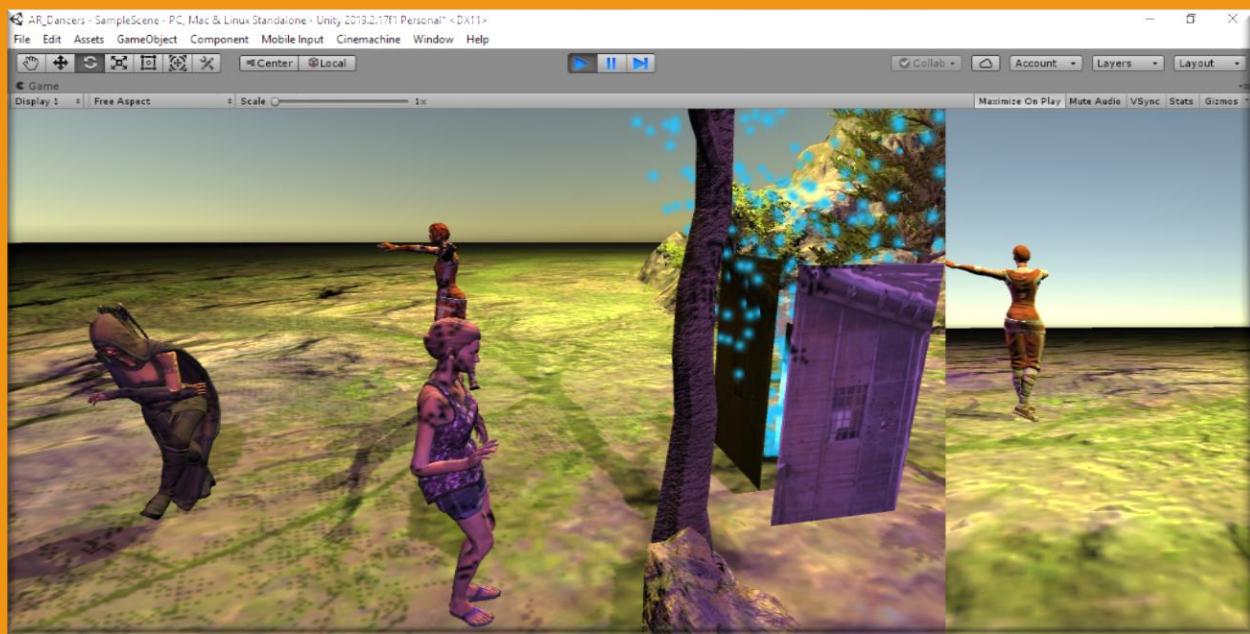
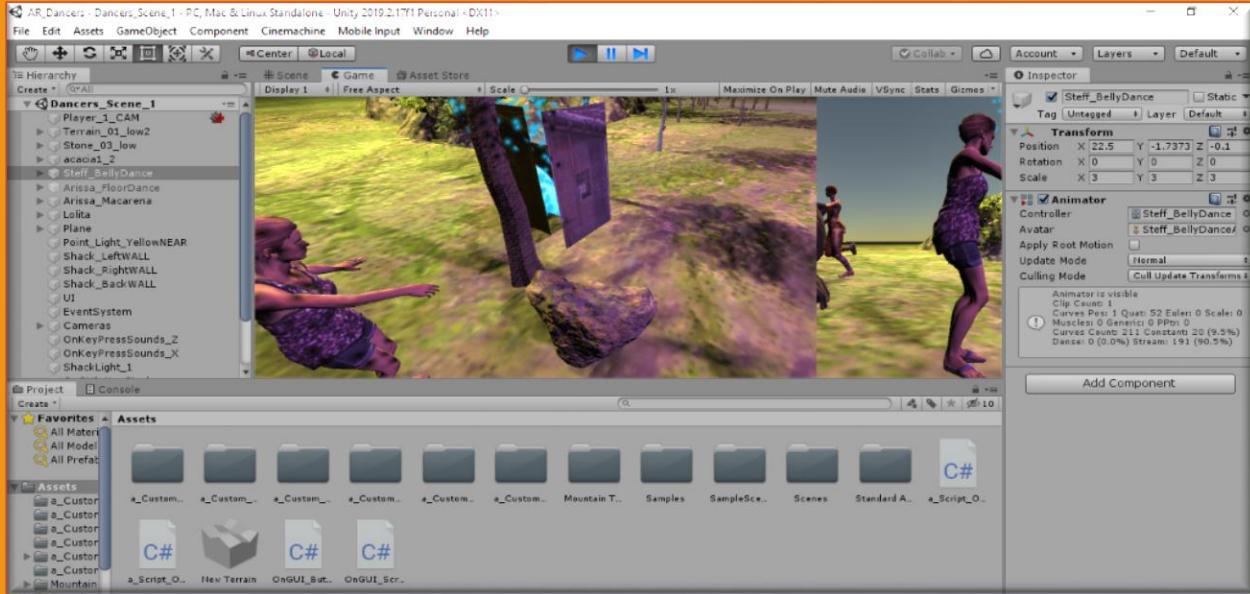


# Absolute Beginners Unity Book



This is the rough first cut of the First Chapter of the - **Absolute Beginners Unity Book** , this is being written in near realtime by **Rohit Dhankar** ( independent / self employed Unity game developer / animator / designer - working under the title of **Unreal Game Labs** ) .

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YouTube - <https://www.youtube.com/channel/UC9J9N9CNv15s9U9Aejpza6g/videos>

<https://www.youtube.com/watch?v=3Rm0TlBx1O4&list=PLPpHcww3qjp7n6i2DznVnbDEmP9OENBqc>

FaceBook - <https://www.facebook.com/AugmentedReality-110417607128839>

Its to be considered a Log of the , hidden quips that have been encountered during creating the very first basic games , game plays and animations with Unity2D and Unity3D.

This content as on date is totally raw and un-edited , shoddy to a great extent - its being put to help anyone who may need it .

There are lots of external to official Unity tutorials being referred , all references as on date are inline within the main text .

#### **Content Disclaimer :-**

Under no circumstances is Rohit Dhankar liable in any way for any Content, including, but not limited to: any infringing Content, any errors or omissions in Content, or for any loss or damage of any kind incurred as a result of the use of any Content posted, transmitted, linked from, or otherwise accessible through or made available via this book.

# Unity and Vuforia ( Augmented Reality )

What all needs to be done for importing target Images from Vuforia Database into local Unity Editor

The screenshot shows a web browser window displaying the Vuforia Target Manager. The URL in the address bar is <https://developer.vuforia.com/targetmanager/project/deviceTargetListing>. The page title is "Own\_Target\_Images". It shows a table of three targets:

Target Name	Type	Rating	Status	Date Modified
UNO	Single Image	★★★☆☆	Active	Jan 07, 2020 17:52
Coke	Single Image	★★★★★	Active	Jan 06, 2020 23:29
HIRO_1	Single Image	★★★☆☆	Active	Jan 06, 2020 19:08

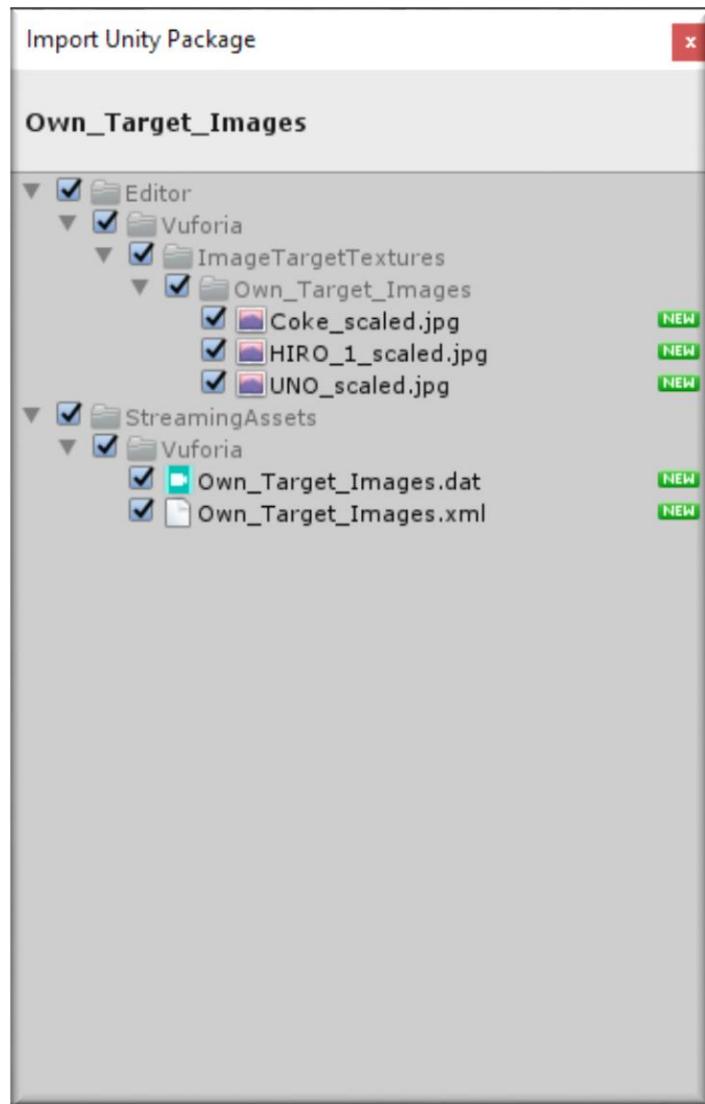
At the bottom of the table, there is a note: "Last updated: Today 05:57 PM Refresh". Below the table, there are buttons for "Add Target" and "Download Database (All)". The browser's toolbar and menu bar are visible at the top.

Insert a Image DataBase as a package from the Vuforia Online database site -

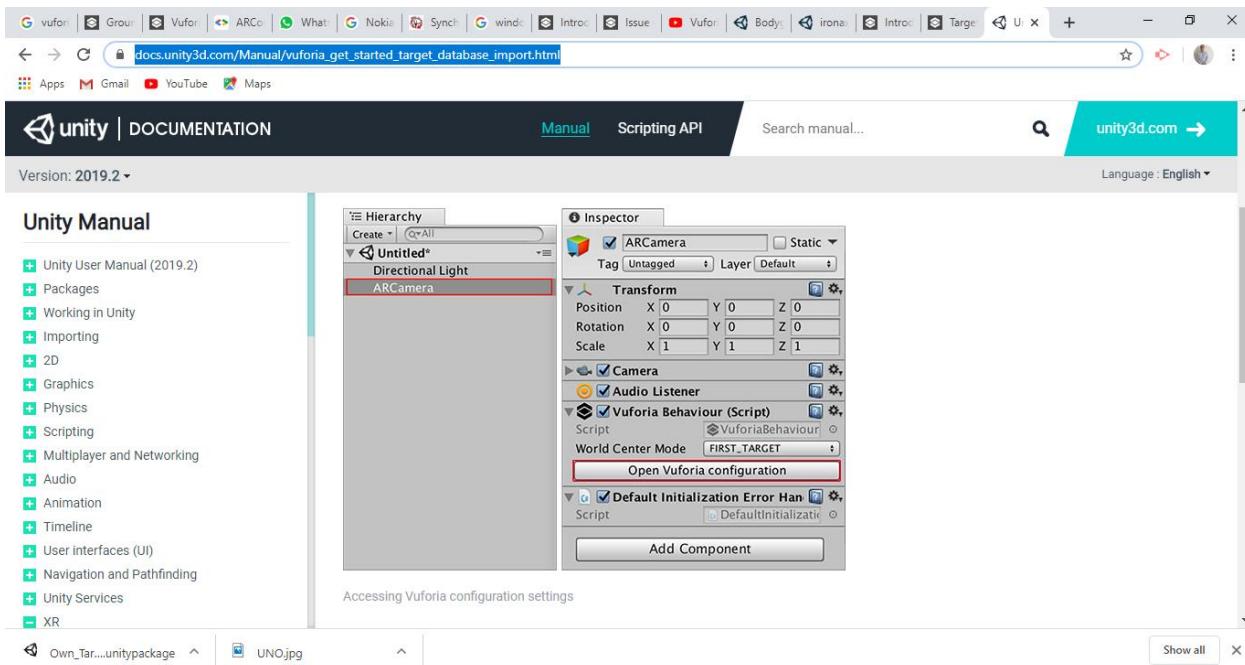
<https://developer.vuforia.com/targetmanager/project/deviceTargetListing>

The screenshot shows the Unity Editor interface with the project name "AR\_Test - Scene\_Guards - Android - Unity 2019.2.17f1 Personal" selected. The scene view shows a camera and a target object (ImageTarget) placed in the world. The Inspector panel on the right shows the "Image Target Behavior" component for the target object, with settings like "Type: From Database", "Database: EMPTY", and "Image Target: EMPTY". The Project panel at the bottom shows assets like "textures", "KTMRearW...", and "KTMRearW..".

Assets > ImportPackage > Custom Package > ONLOCAL DIR Unity Image Database saved as a unityPackage



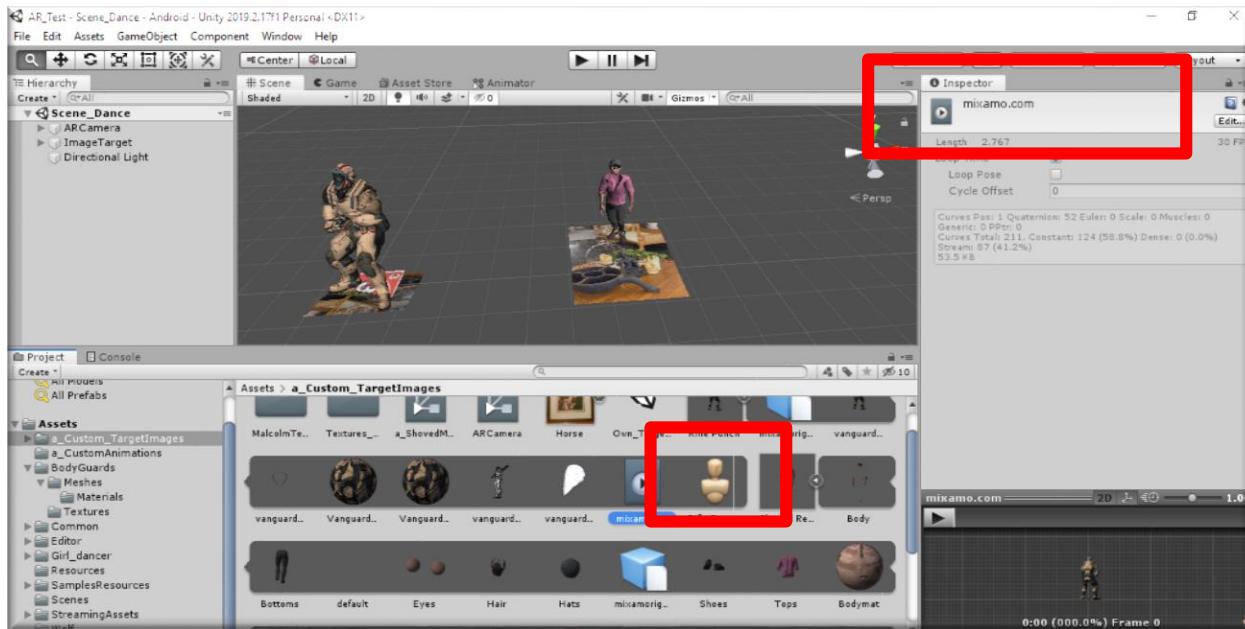
[https://docs.unity3d.com/Manual/vuforia\\_get\\_started\\_target\\_database\\_import.html](https://docs.unity3d.com/Manual/vuforia_get_started_target_database_import.html)



## Importing and Customizing Animations from MIXAMO.com

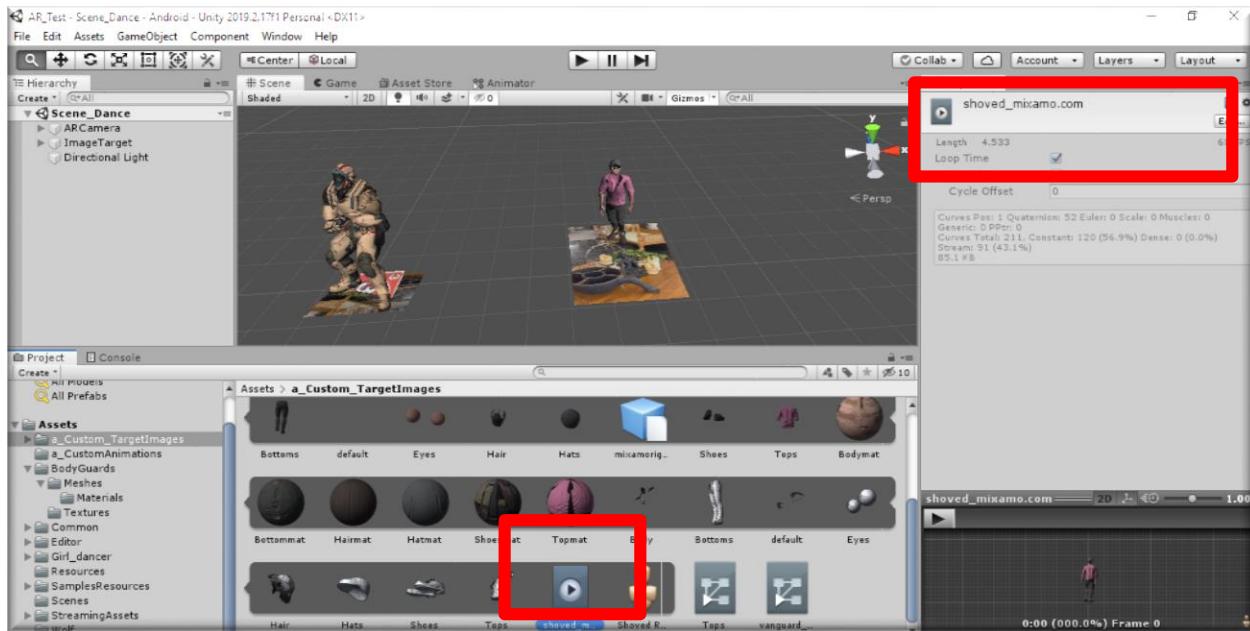
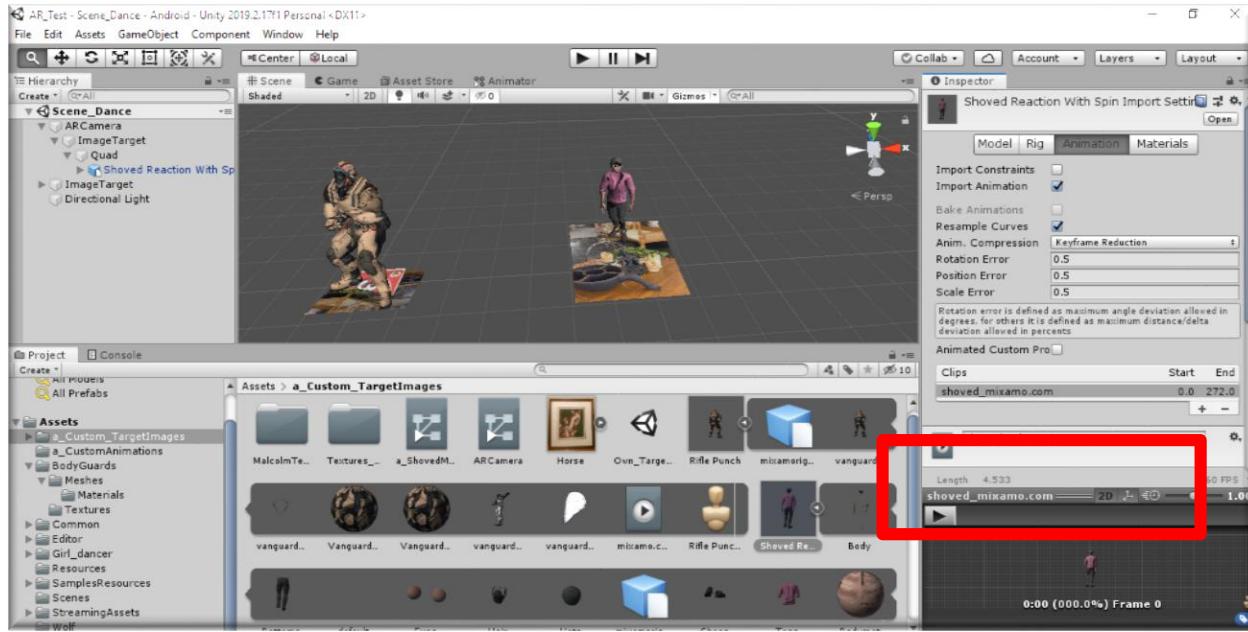
Issue - within unity rename animator controller motion file. There are animations being downloaded as .FBX files from MIXAMO - <https://www.mixamo.com/#/?page=1&type=Motion%2CMotionPack>

All these files get downloaded with a - mixamo.com - animation object . As seen below --- we have multiple of these in the project .

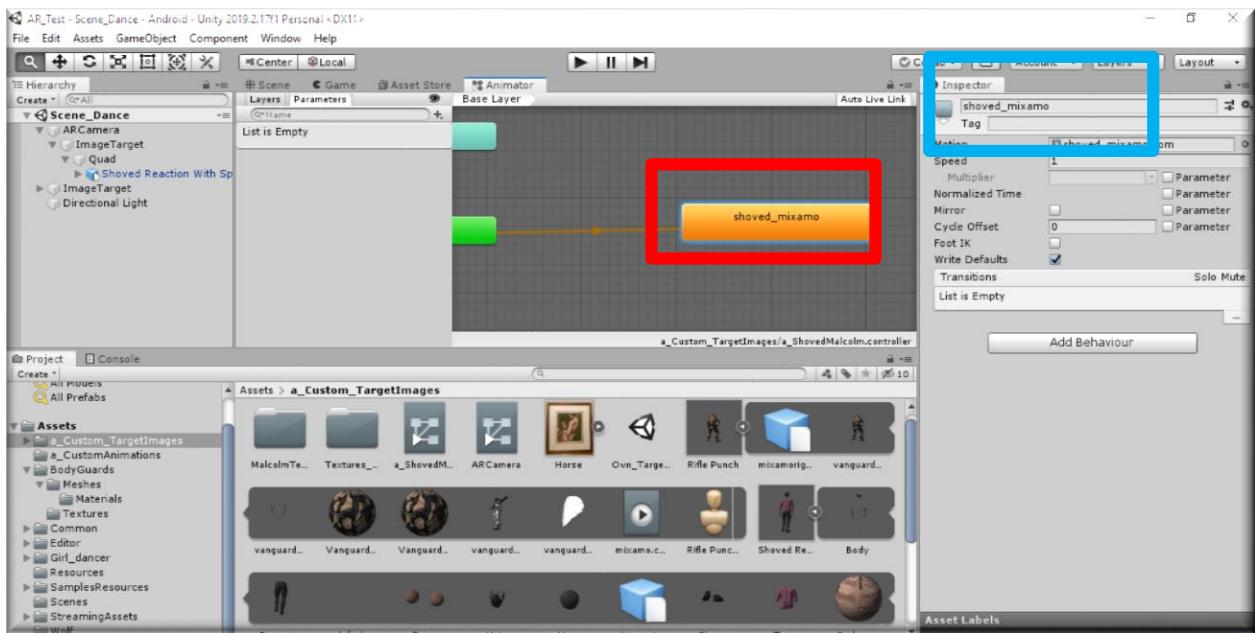


Change the name in the **RIGHT** Side Inspector panel - Select game Object >> Inspector >> Model >> **SELECT** >> MODEL | RIG | **ANIMATION**

Under the **ANIMATION** - in the highlighted text box change the name and start playing the animation in the window below . as we play the animation the name change is seen to take effect.



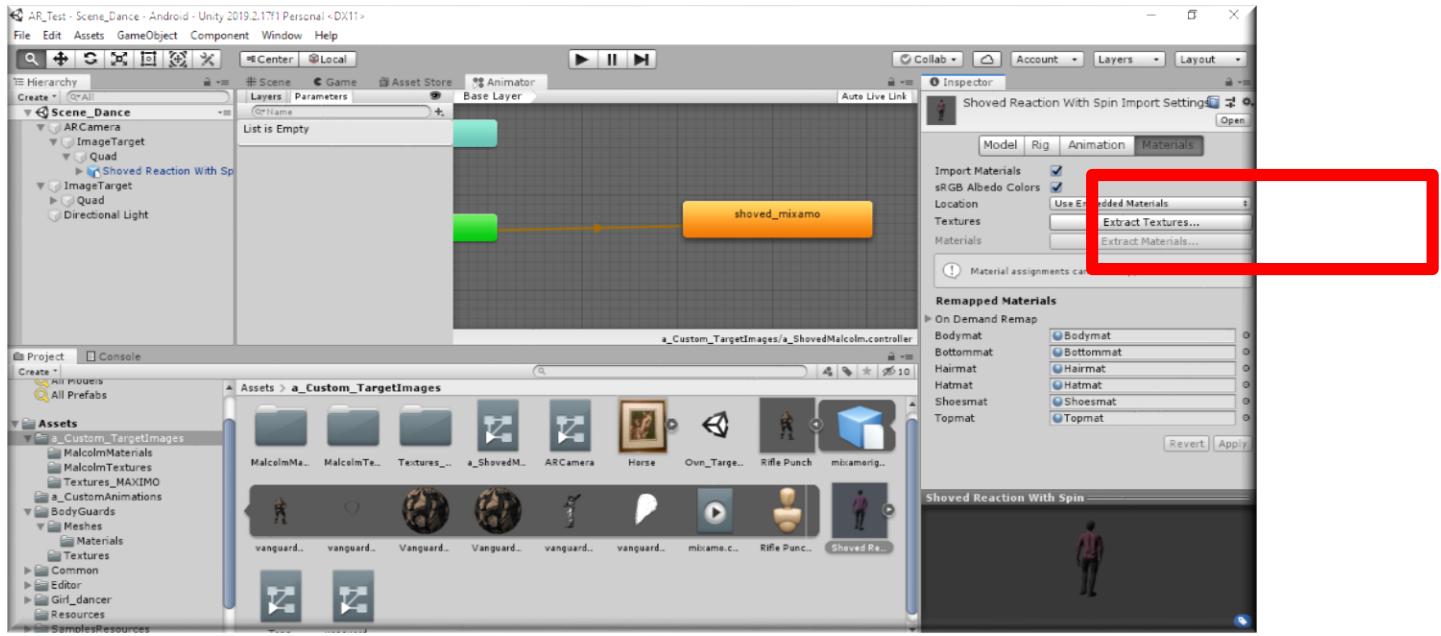
Now go back to animation controller window - you will see the **YELLOW / ORANGE** - object has lost its NAME and is just blank - **YELLOW / ORANGE** - rename it in the TOP RIGHT Text Box - highlighted in **BLUE** BELOW



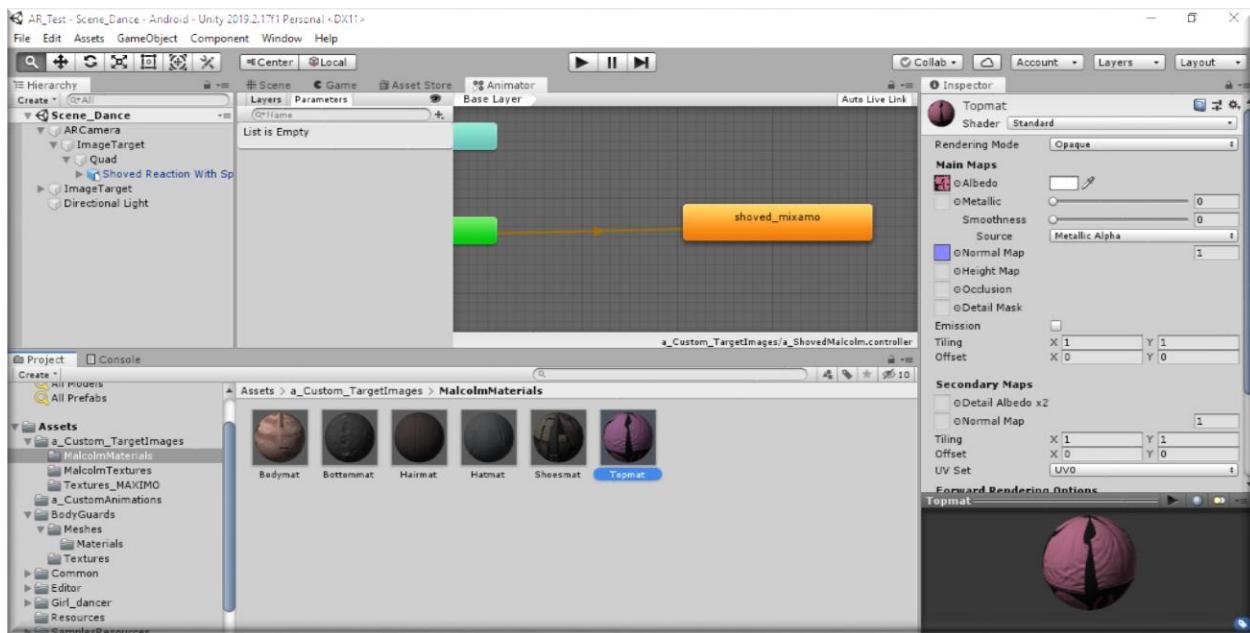
# Challenge - 3D Model Material Not being Opaque

The material is Not OPAQUE - but TRANSPARENT --- thus cant see the MIXAMO humanoid --- unity3d shader standard rendering mode opaque. The MATERIALS - which get imported by DEFAULT - may not allow editing --- thus we import them again and save them in a NEW FOLDER --- then they can be edited.

Materials >> EXTRACT MATERIALS >> POP UP asking for a New Folder Name >> Materials Extracted to New Folder - are then editable - these materials can now be changed from **TRANSPARENT** to **OPAQUE**

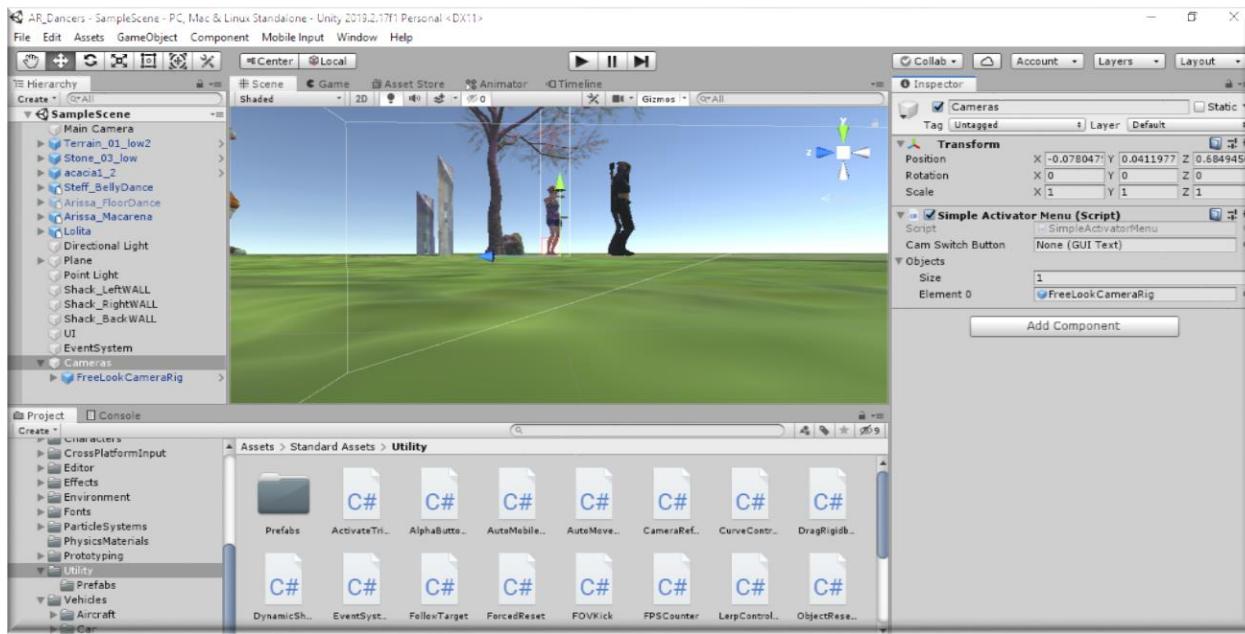
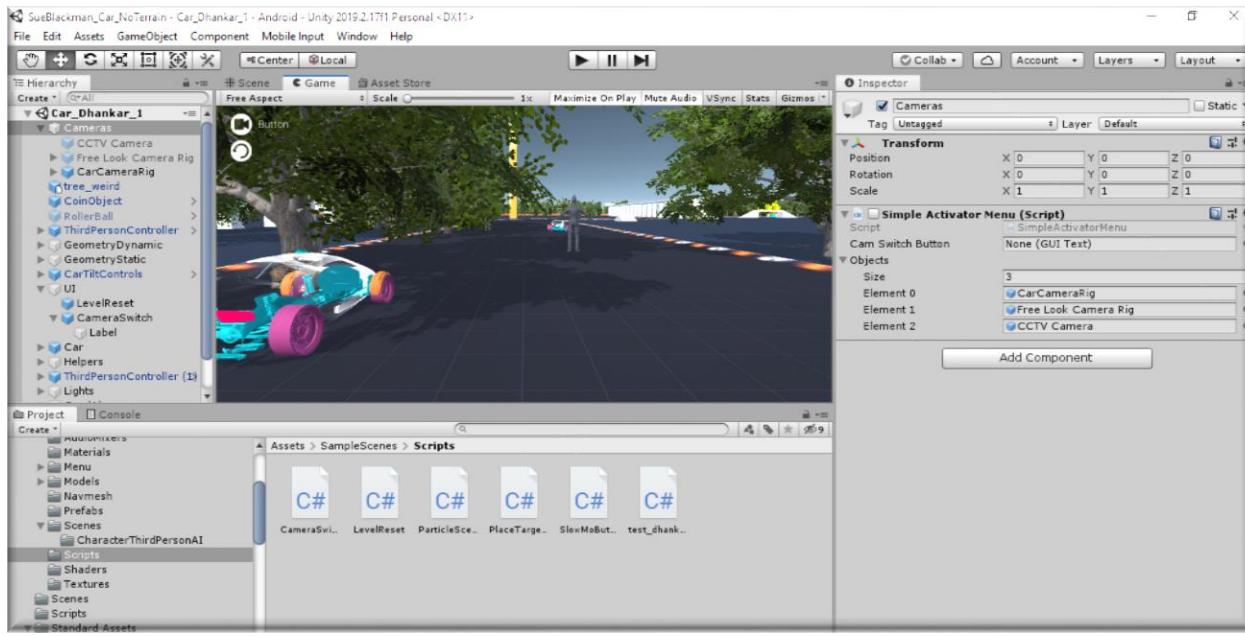


Created a New Folder as seen below CustomTargetImages , have named it MALCOLM Materials.

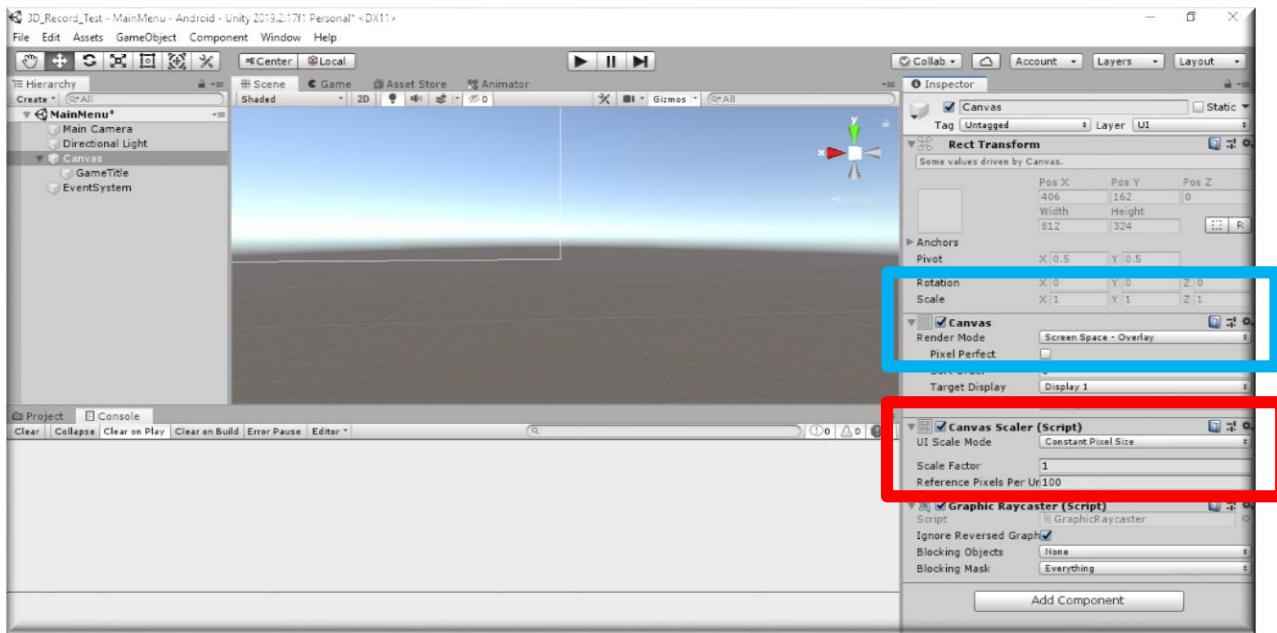


# Get a FreeLookCameraRig into a new project – Copy the same from STANDARD ASSETS

The FreeLookCamera rig can be copied into a new project but this may not be a longterm or ideal solution . For the ideal Solution we shall use Cinemachine at a later stage in this project .



# Using the CANVAS SCALER to maintain UI elements

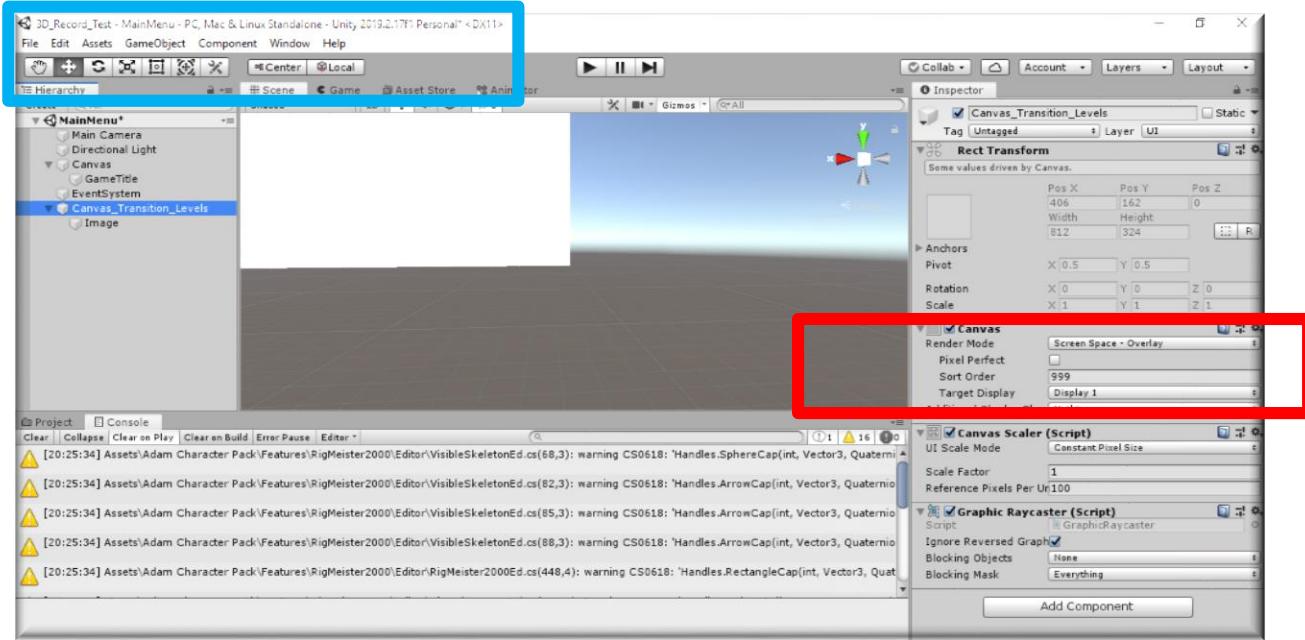


Canvas Scaler | Dynamic Pixels Per Unit to 10.

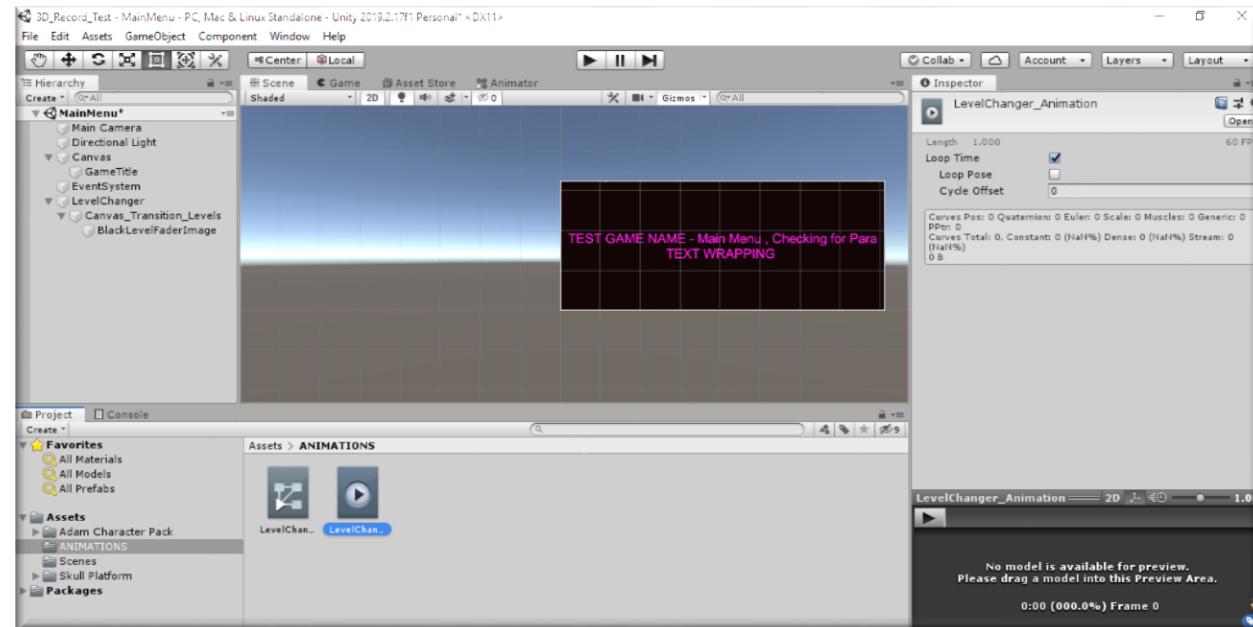
As seen in space highlighted with the Blue Rectangle , I have kept the RENDER MODE = Screen space overlay. For VR – Virtual Reality in certain books and internet resources its maintained as -WorldSpace

# Fade in and Fade Out Level / Scene Transitions

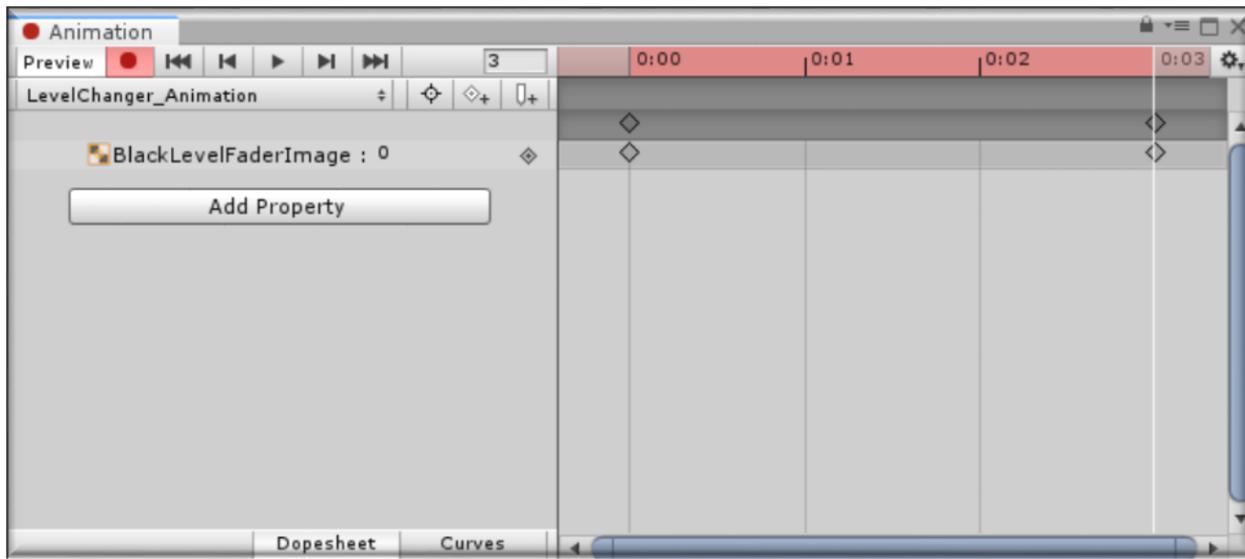
Main reference for this section is the wonderful Youtube video created by , the excellent YouTuber BRACKEYS == <https://www.youtube.com/watch?v=Oadq-IrOazg>



Seen above in RED --- SORT ORDER = 999 . As in when Layers are Sorted or Objects are Sorted for Display – this CANVAS is always on TOP . To go to the Animation Pop-Up window , choose the Game Object named – **Level Changer** then click **CTRL + 6** , this shall bring up the Pop-Up window for creating ANIMATION's.



Then created a new DIR – named ANIMATIONS , Saved animation within it – a CONTROLLER got created on its own with the same name as the GameObject.

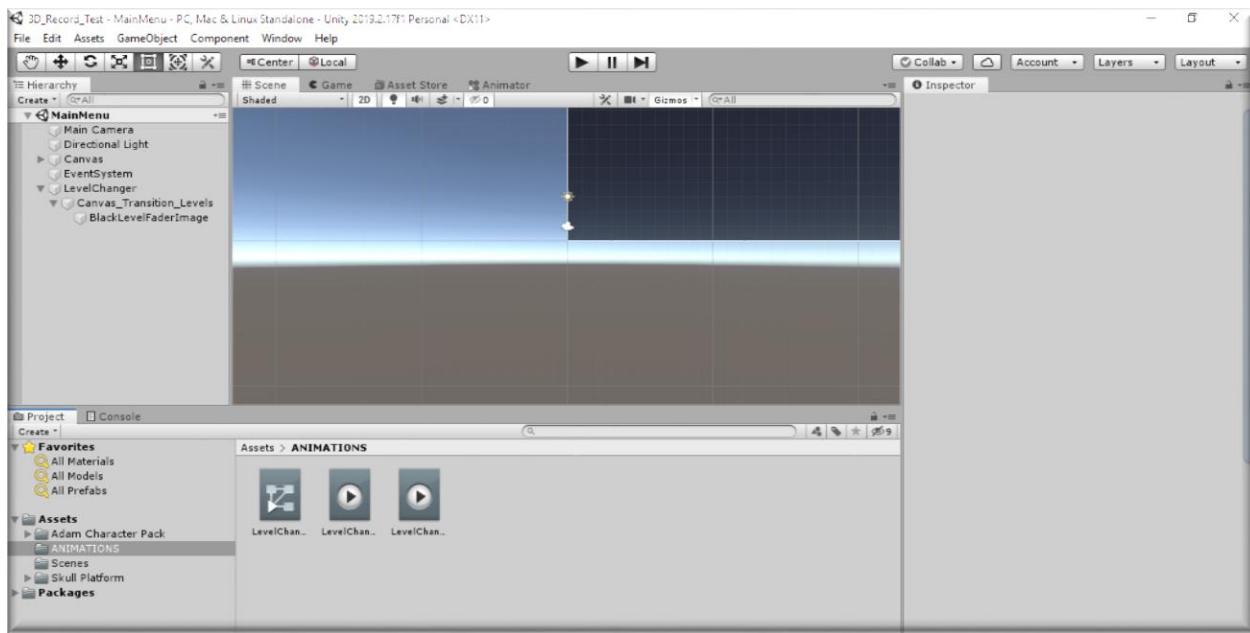


As seen above –

1. In left HIERARCHY Window Selected – LEVEL CHANGER
2. Then Clicked **CTRL + 6**
3. Auto Launched Animation POP UP Window
4. Chose the **BlackLevelFaderImage**
5. Hit the RED DOT – RECORD
6. Dragged vertical White Line Few seconds ahead
7. Went to RIGHT SIDE – INSPECTOR
8. Chose image – IMAGE ( SCRIPT ) >> Source >> Color
9. Made the COLOR – **RGBA** – Alpha Channel TRANSPARENT – by dragging the Slider Extreme left

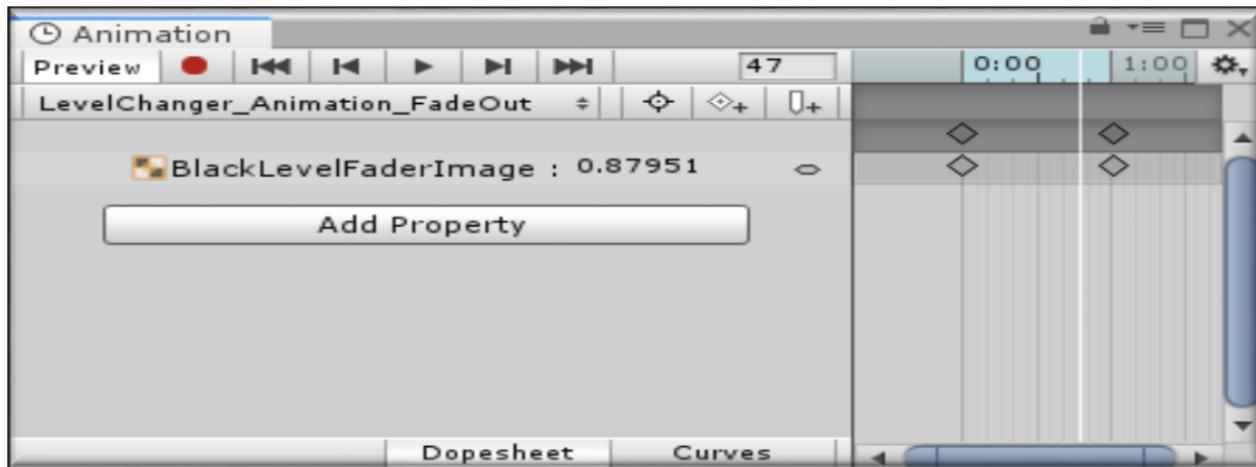
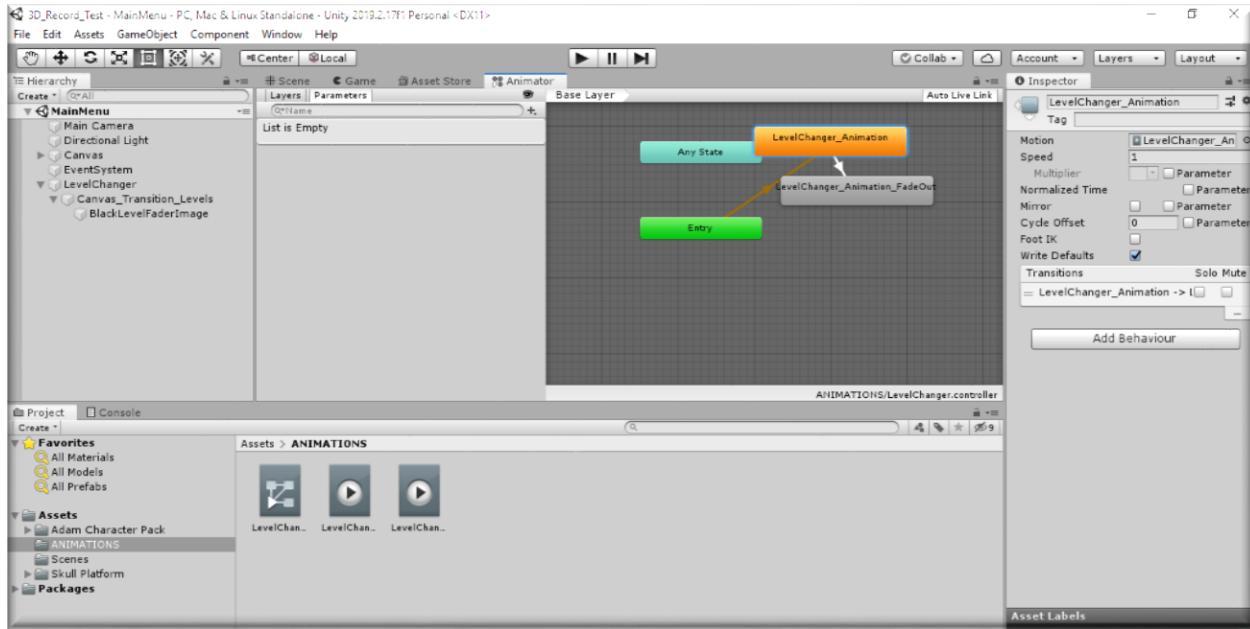
Using the ANIMATION EDITOR -- <https://docs.unity3d.com/Manual/animeditor-UsingAnimationEditor.html>

Now create another ANIMATION – FADE\_OUT

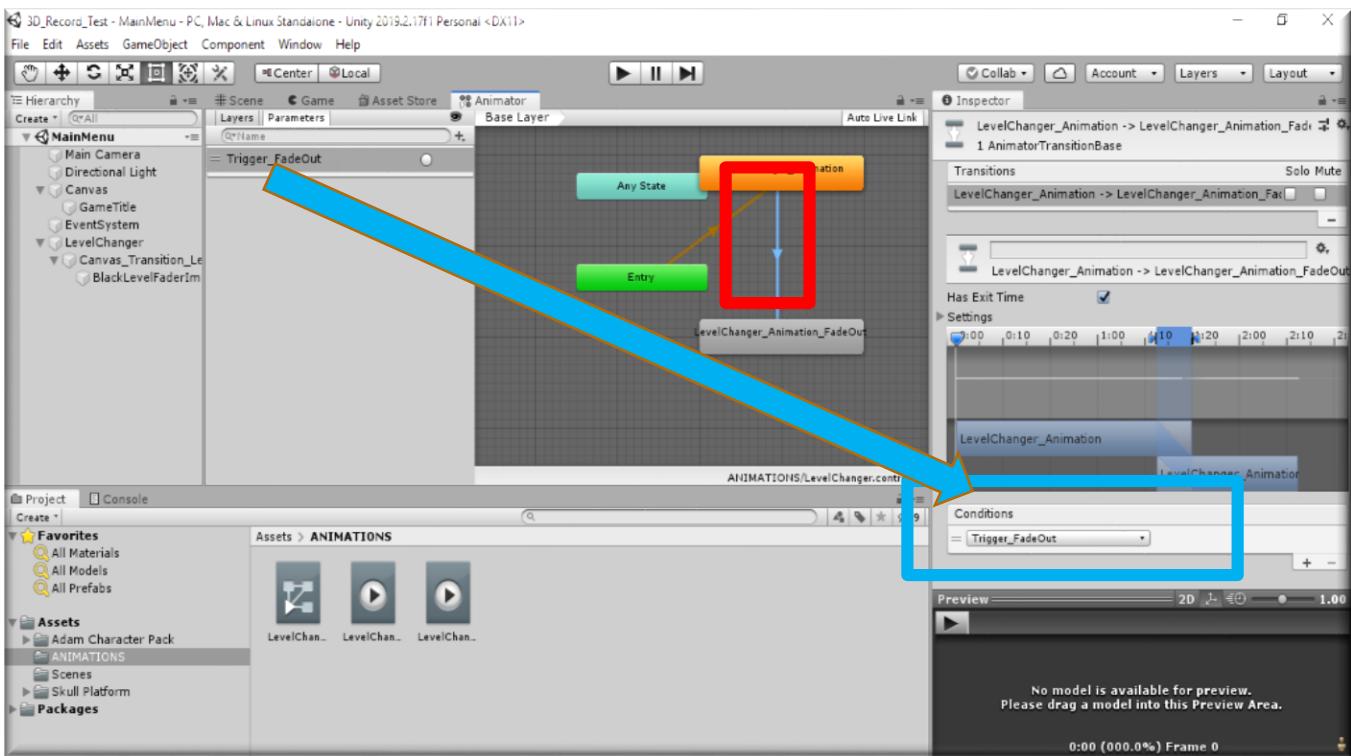
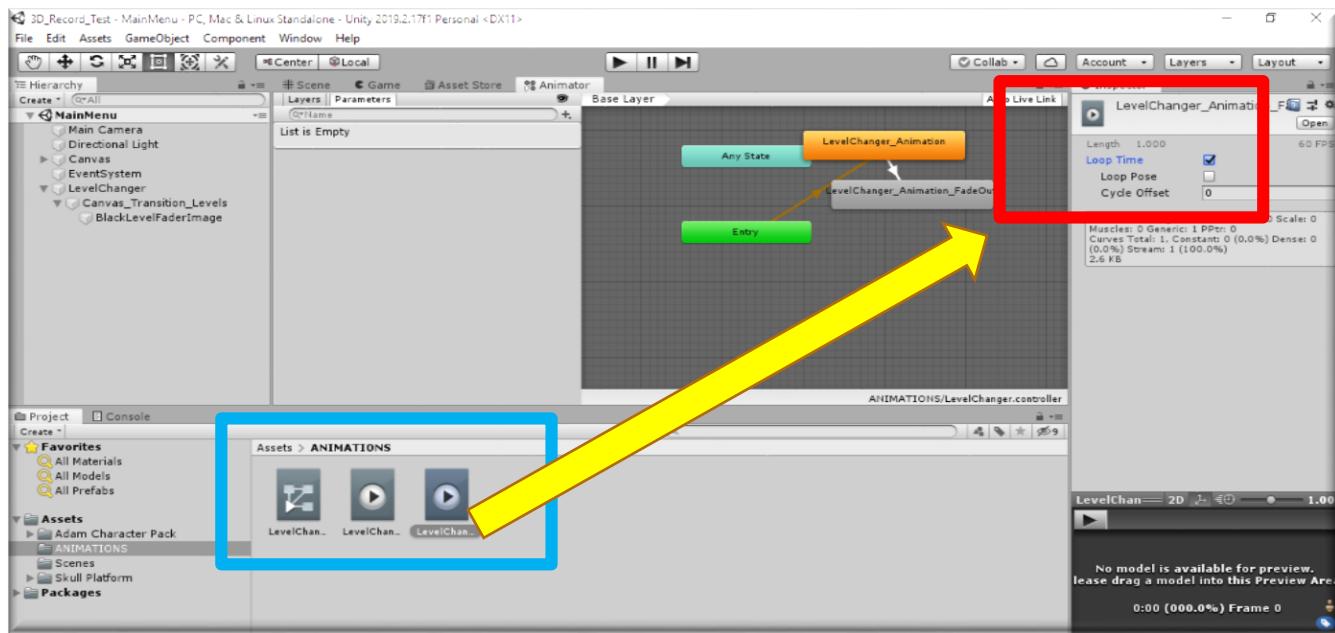


Double Clicked the – LevelChanger (ANIMATION CONTROLLER)

Chose the ORANGE part and MADE TRANSITION

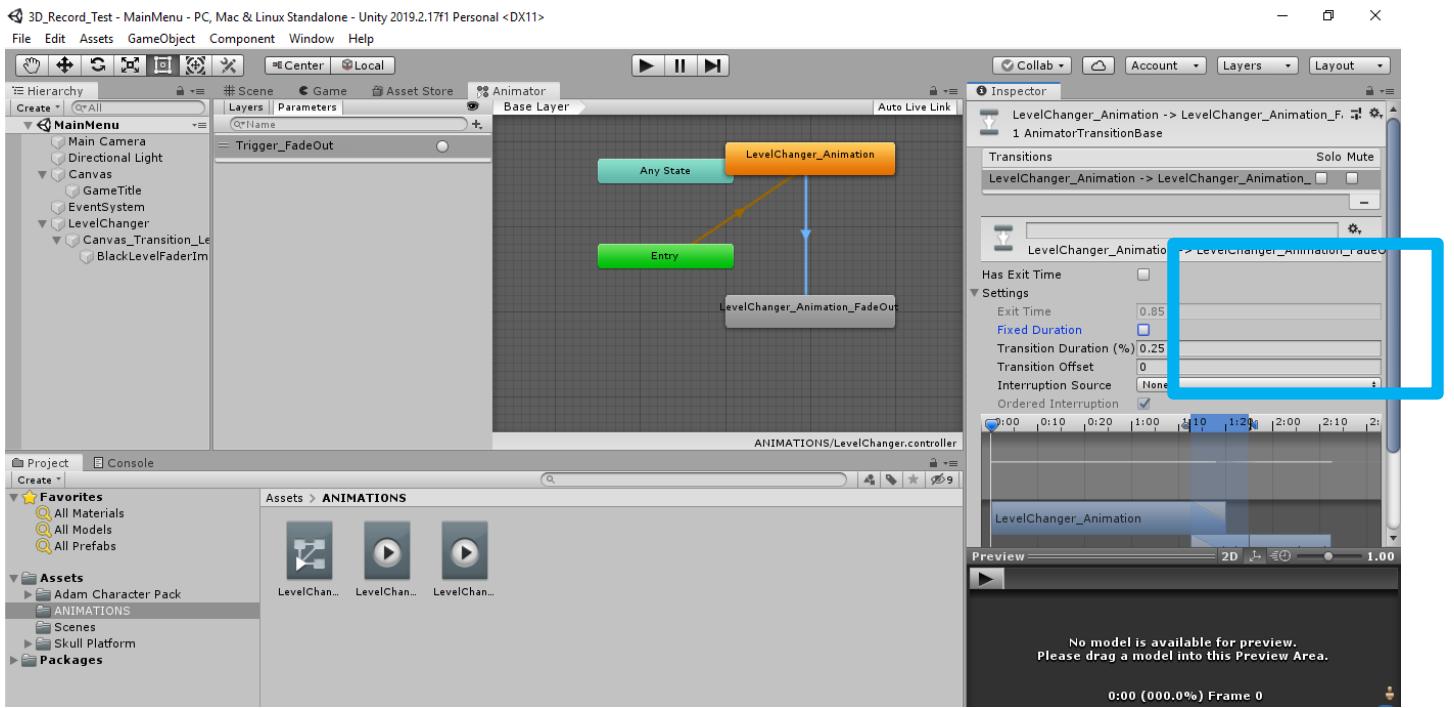


To ensure the ANIMATIONS don't LOOP – UNCHECK the LOOP within the RED RECTANGLE below



The **Trigger\_FadeOut** is a New Trigger created as a Parameter for the Animation Controller

Within the BASE LAYER – when we click on the TRANSITION Arrow , it opens the INSPECTOR window on the right . Within this go down to CONDITIONS ( in the Blue Box above) and **ADD + Trigger\_FadeOut**

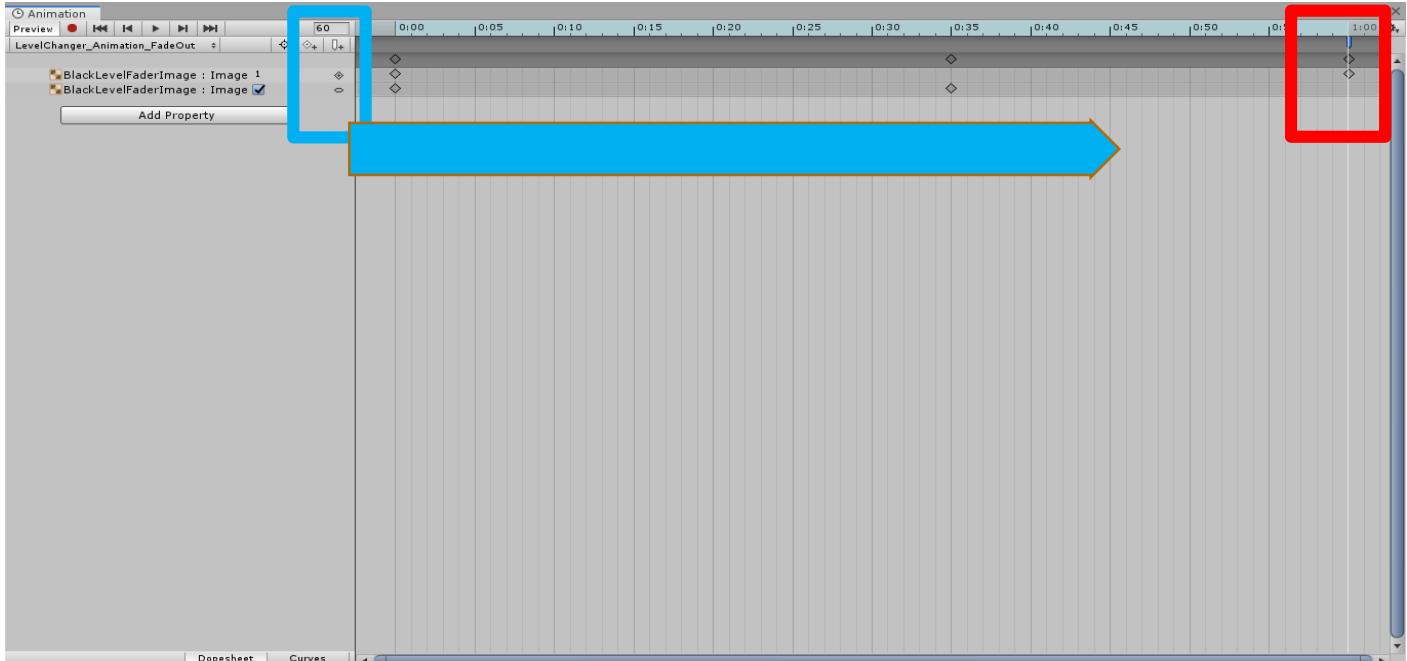


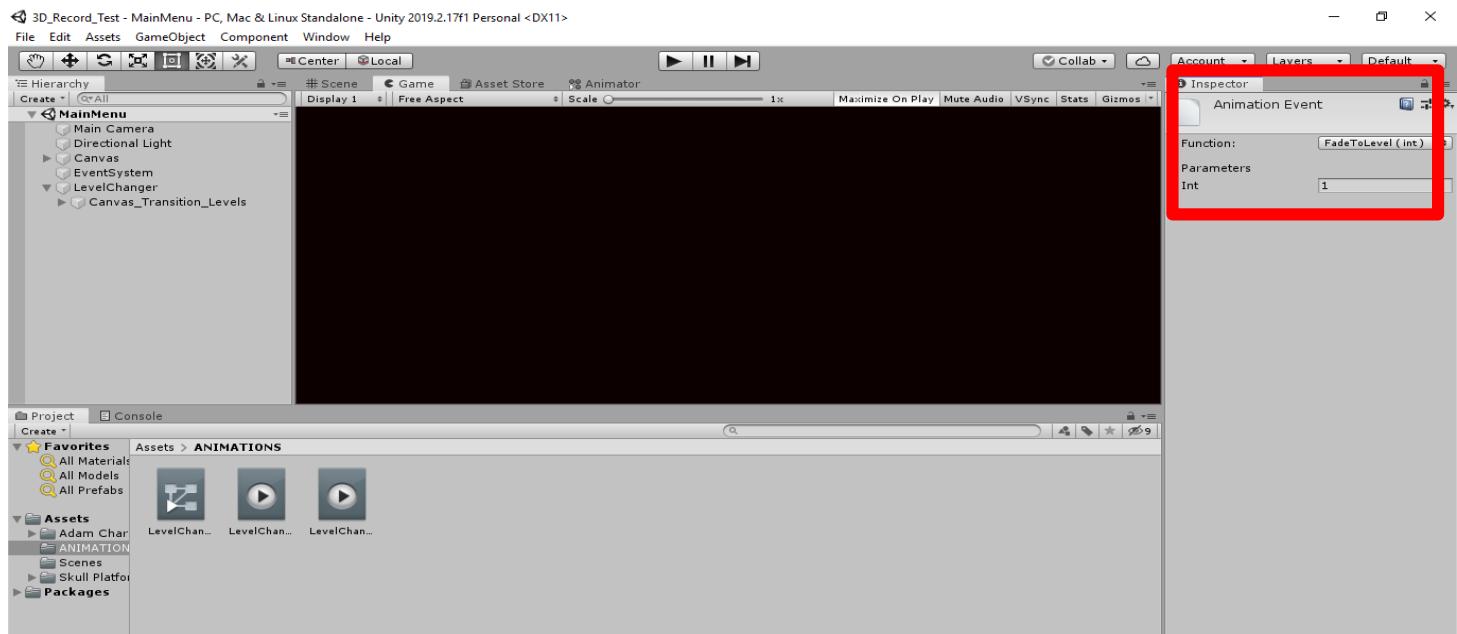
Above in the BLUE BOX – Unchecked both --- **HAS EXIT TIME** and under **SETTINGS >> FIXED DURATION**

Transition duration also set to ZERO

Now CREATE AND ADD a SCRIPT == **LevelChanger\_script**

To go to Next Level after the FADE OUT Animation , use ADD EVENT --- this is the Icon seen as highlighted in the Blue Rectangle below

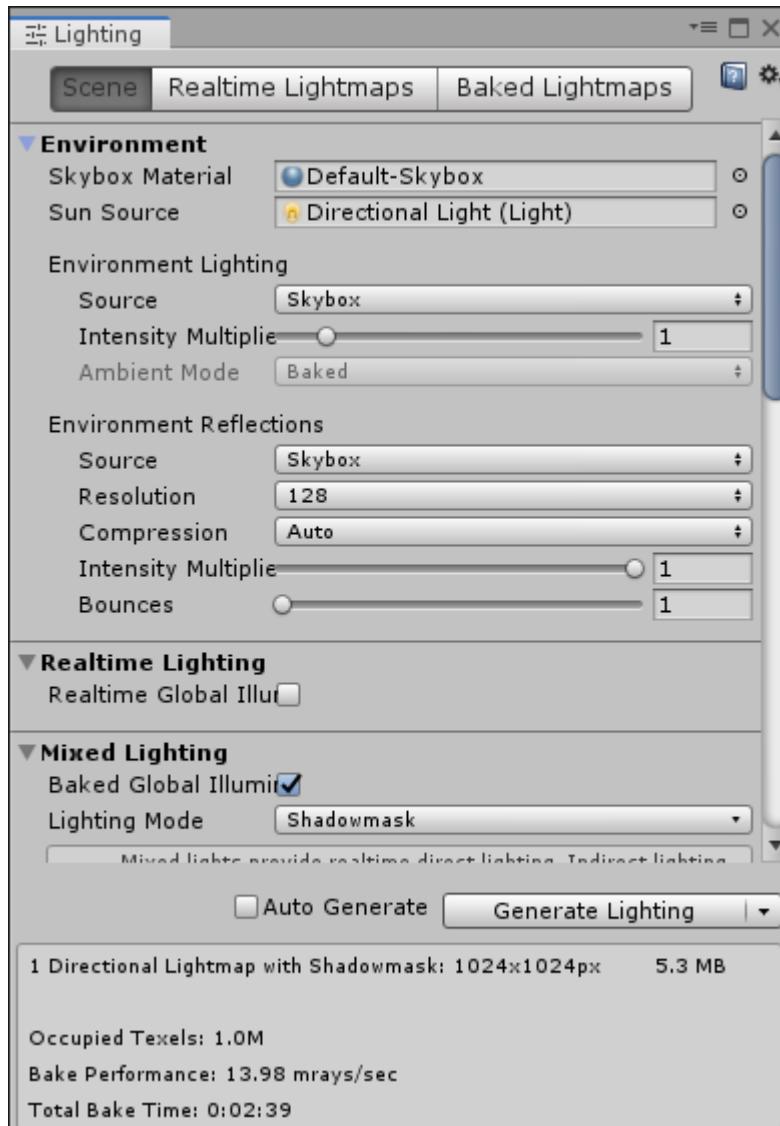




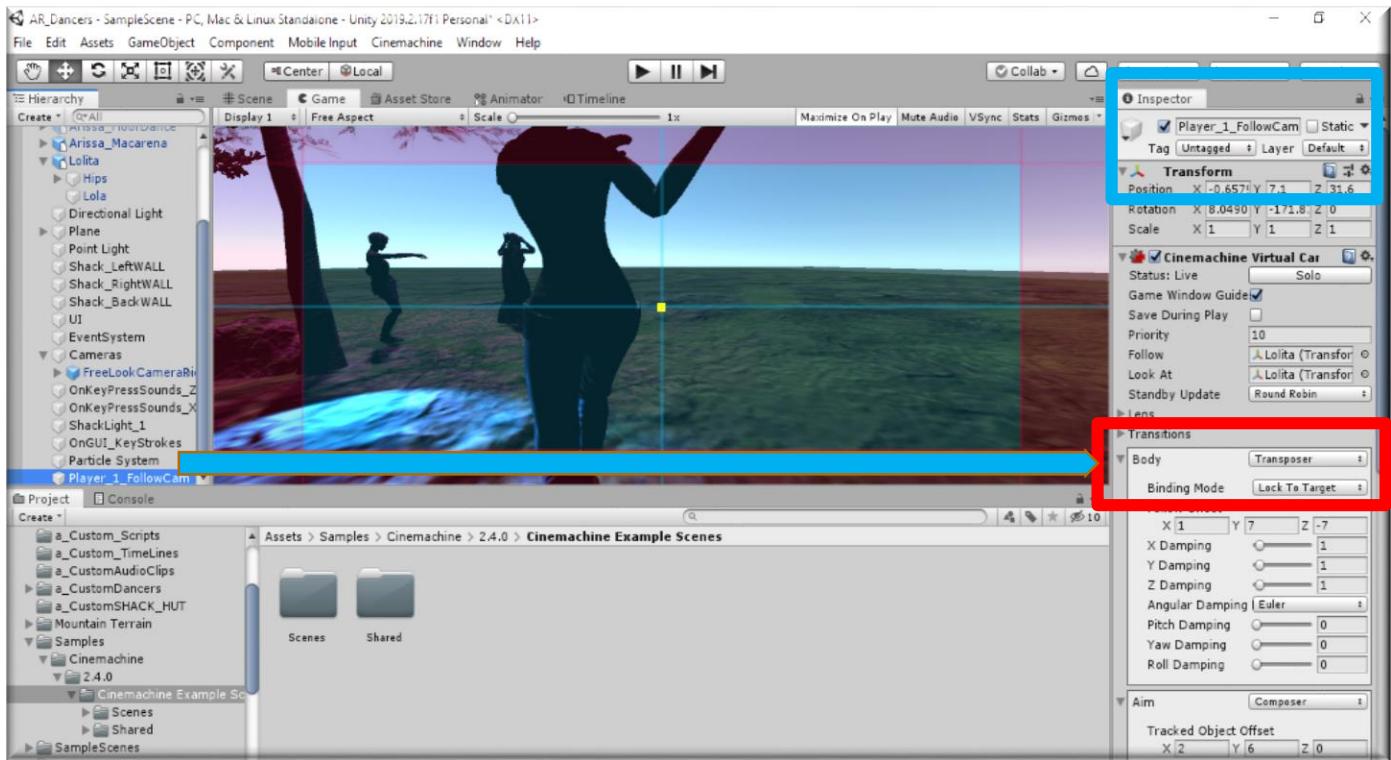
# AutoGenerate Lighting OFF

Unity best practices says Turn Auto generate Lighting OFF , so we keep the same off and create the light within the scene using Point Lights for now , have done away with the Directional light for now .

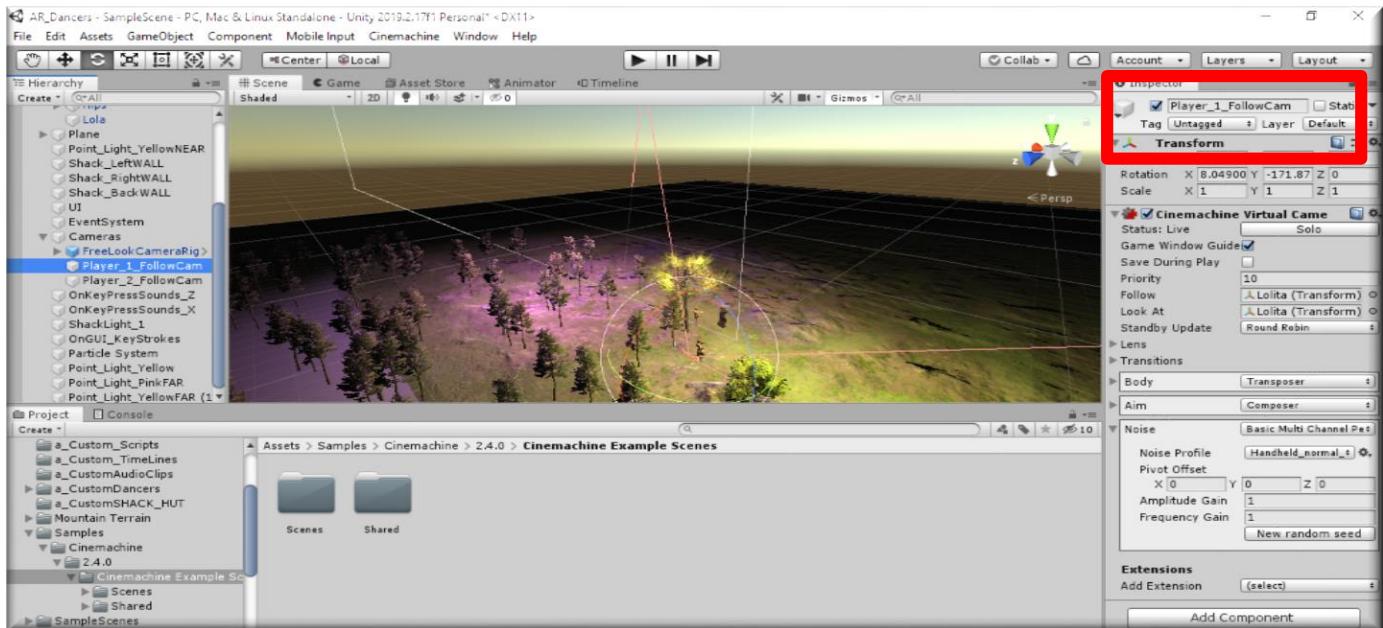
<https://learn.unity.com/tutorial/lighting-best-practices#5c7f8528edbc2a002053b5b1>



# Creating Follow Player cameras using CineMachine



Seen above created a - **Player\_1\_FollowCam** , also created a layer named - **Player\_1\_FollowCAM** , have now added the **Player\_1\_FollowCAM** to the LAYER , **Player\_1\_FollowCAM**.

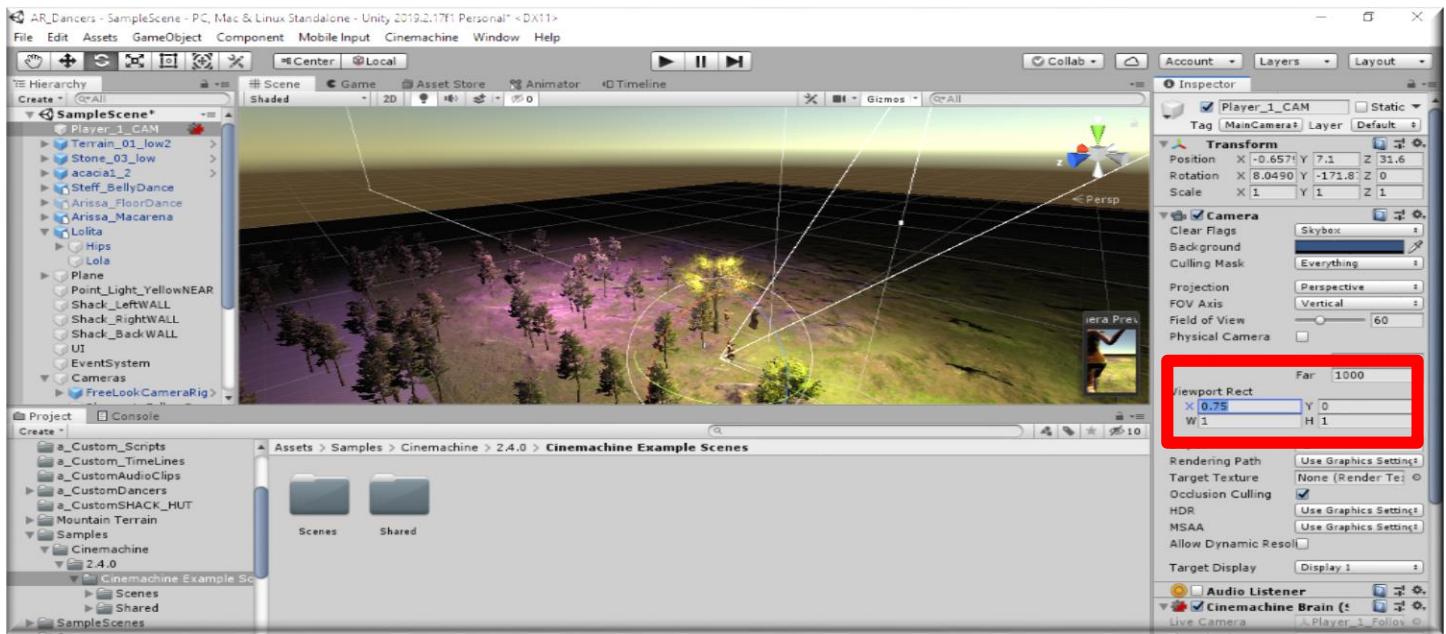


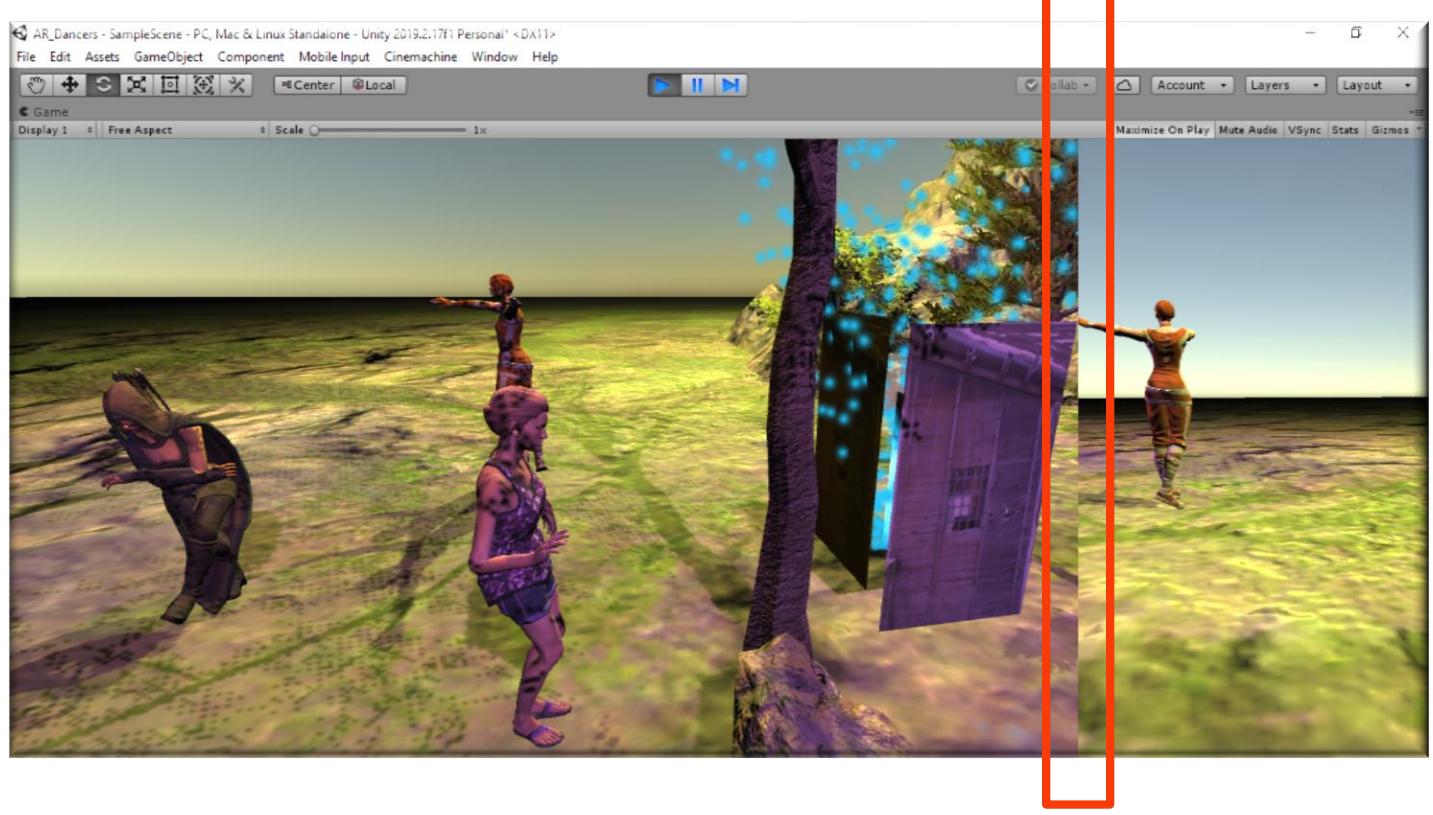
In a similar manner add Player\_2\_FollowCAM to the LAYER = Player\_2\_FollowCAM.

# Using the Cinemachine and Player Follow Cameras - Split the Screen during PLAY Mode

As seen below - Choose the MAIN Camera , Player\_1\_CAM . This is NOT one of the the FOLLOW CAM's

Go to **Viewport RECT** - change the X value to SPLIT SCREEN - with a **VERTICAL SPLIT** --- 0.5 for half 0.75 for  $\frac{3}{4}$  etc ...

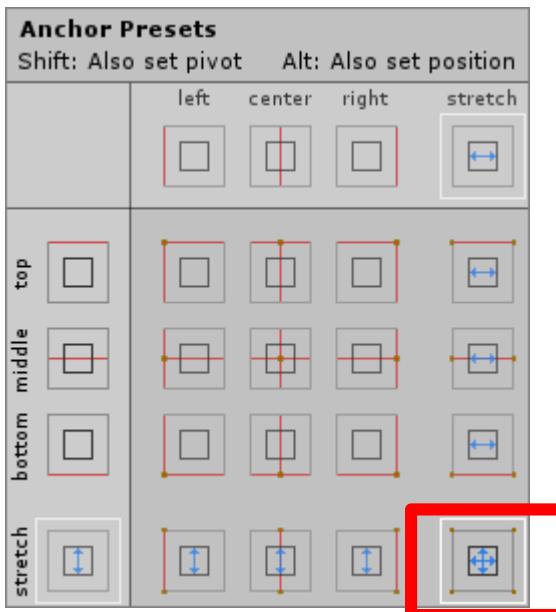




**Split screen as seen above .**

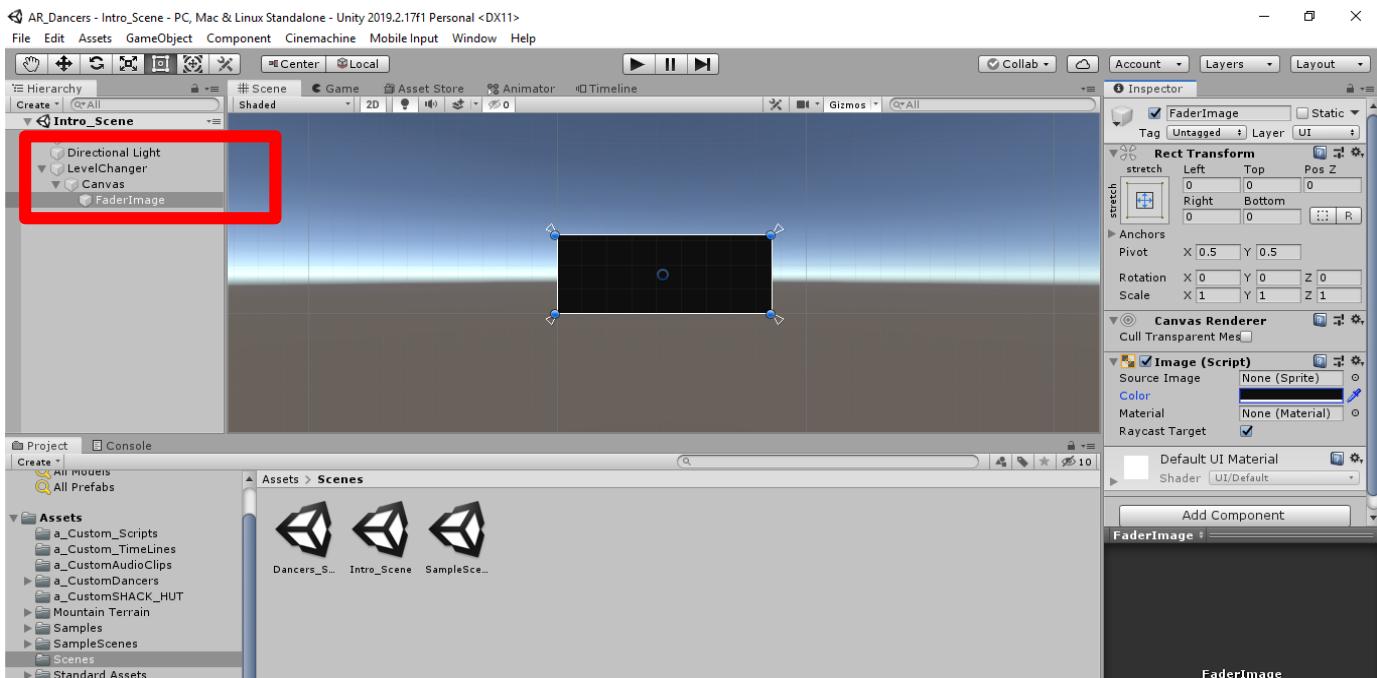
# Repetition of - Fade from One Level / Scene to Another

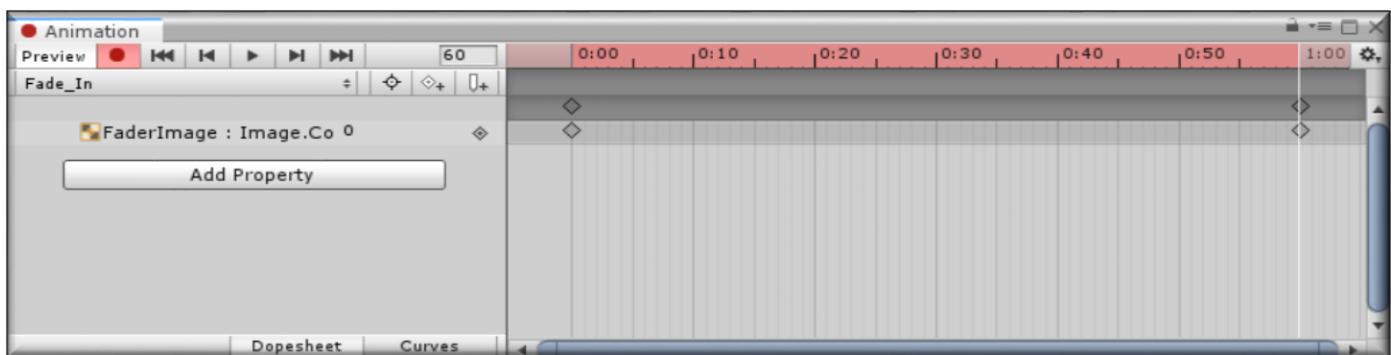
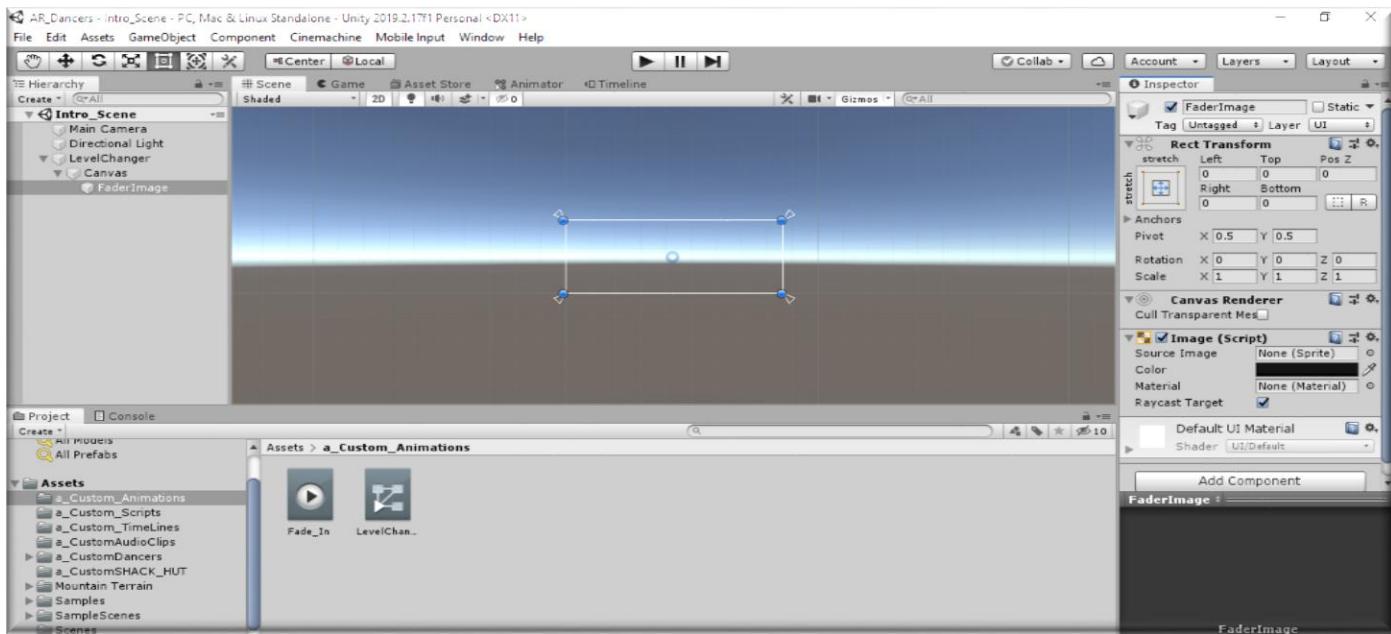
Again Fade from One level Scene to Another - now in the main - Dancers app/ animation project. To Scale the image to Fit the entire Canvas. Select Image - hit keyboard key - F , to Focus on the image . go to **INSPECTOR** >> **RECT TRANSFORM** >> Box on the left - stretch - stretch - click on box and Hold down **ALT Key**.



This will stretch the IMAGE to fill up the entire CANVAS.

To go to the - timeline View, click on the **GameObject - Level Changer** and then click **CTRL+6**



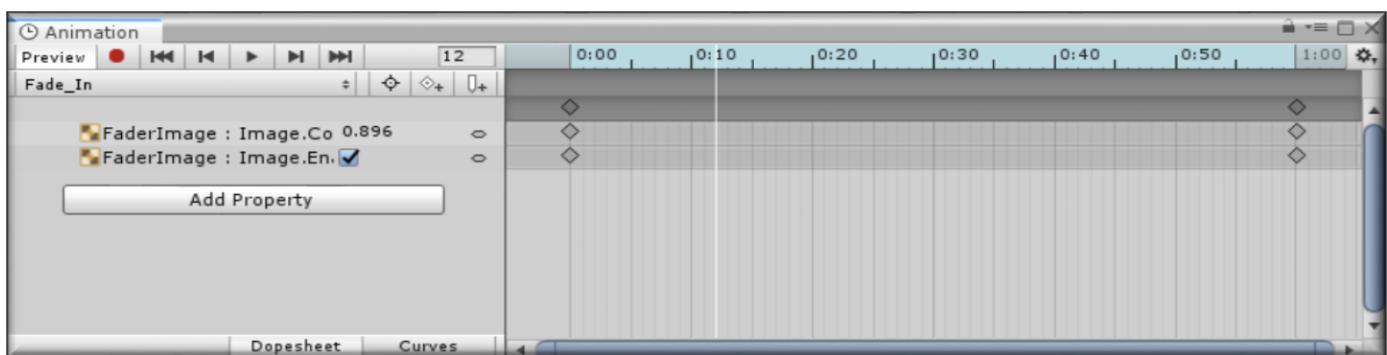


As seen above - We click the RED BUTTON - which starts recording the Animation .

We then click the BLACK IMAGE - which is the Target being animated .

Drag the white animation timeline fwd to end of One Second .

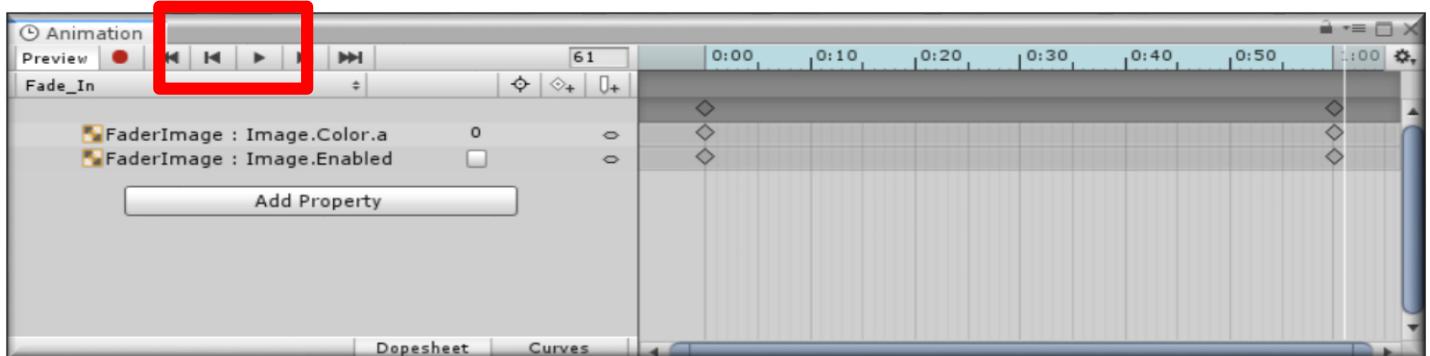
Now choose the Images COLOR in the inspector on the right . Drag ALPHA - transparency slider to LEFT - thus image becomes Transparent at the end of ONE SECOND after the animation begins .



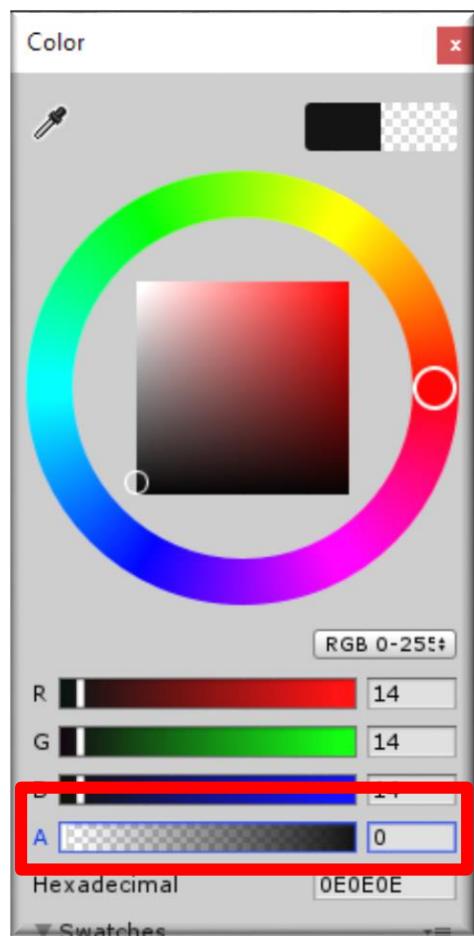
Also as seen above - if we don't need the IMAGE at the end of the ANIMATION's end of Second ONE - we can't UNCHECK the IMAGE in the INSPECTOR as the animation slider reaches the right side or the end of the animation .

This creates and adds another PROPERTY to the ANIMATION - which shows the **Image.Enabled** as **UNCHECKED**

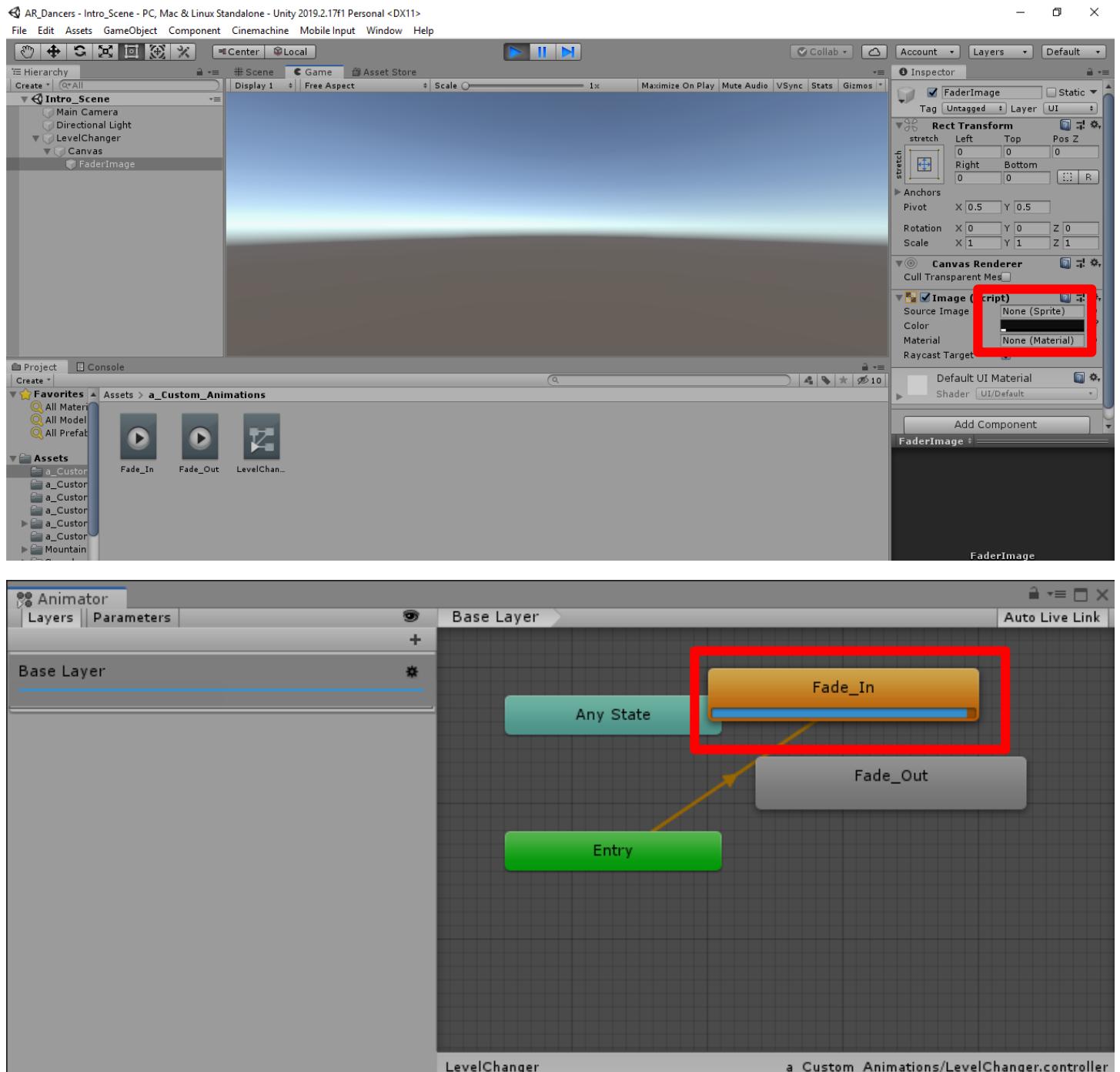
To see the effect of the animation - we can use the PLAY controls built within the ANIMATION pop Up Window or even choose the main Scene >> Game >> Play

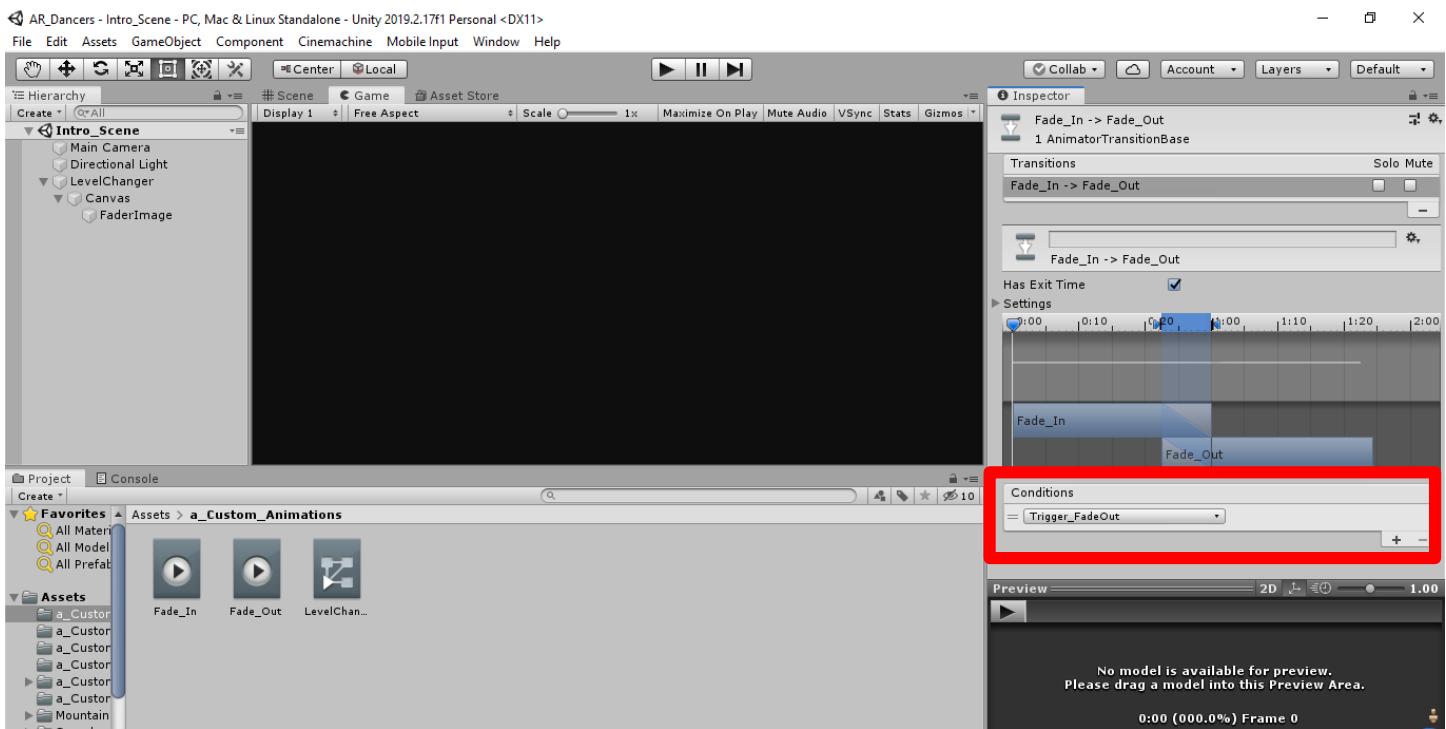


Create another animation name it **Fade\_Out** , start with same image , this time begin with Transparency / Alpha as ZERO and then after a second move to - max alpha by moving slider extreme right .

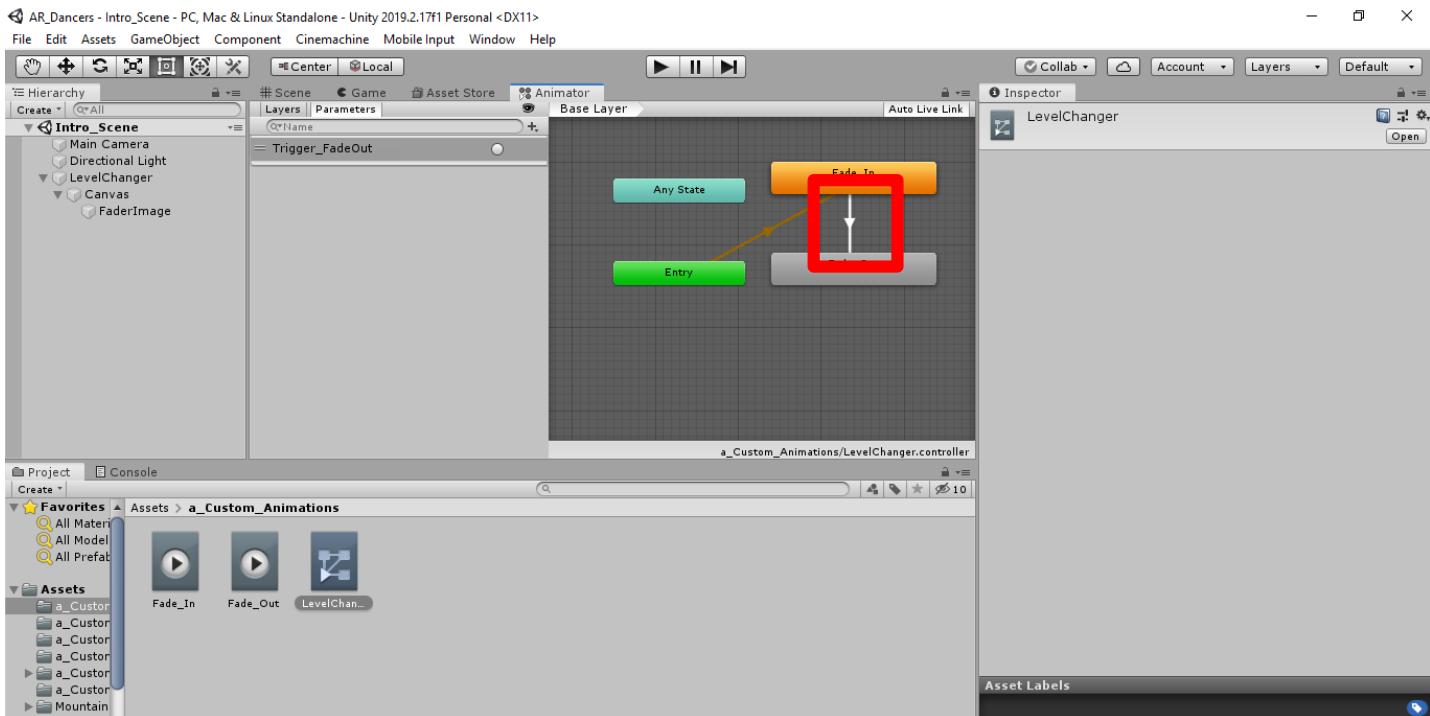


As seen below the FADE\_In and FADE\_Out animations are running when we click on the GAME >> PLAY.



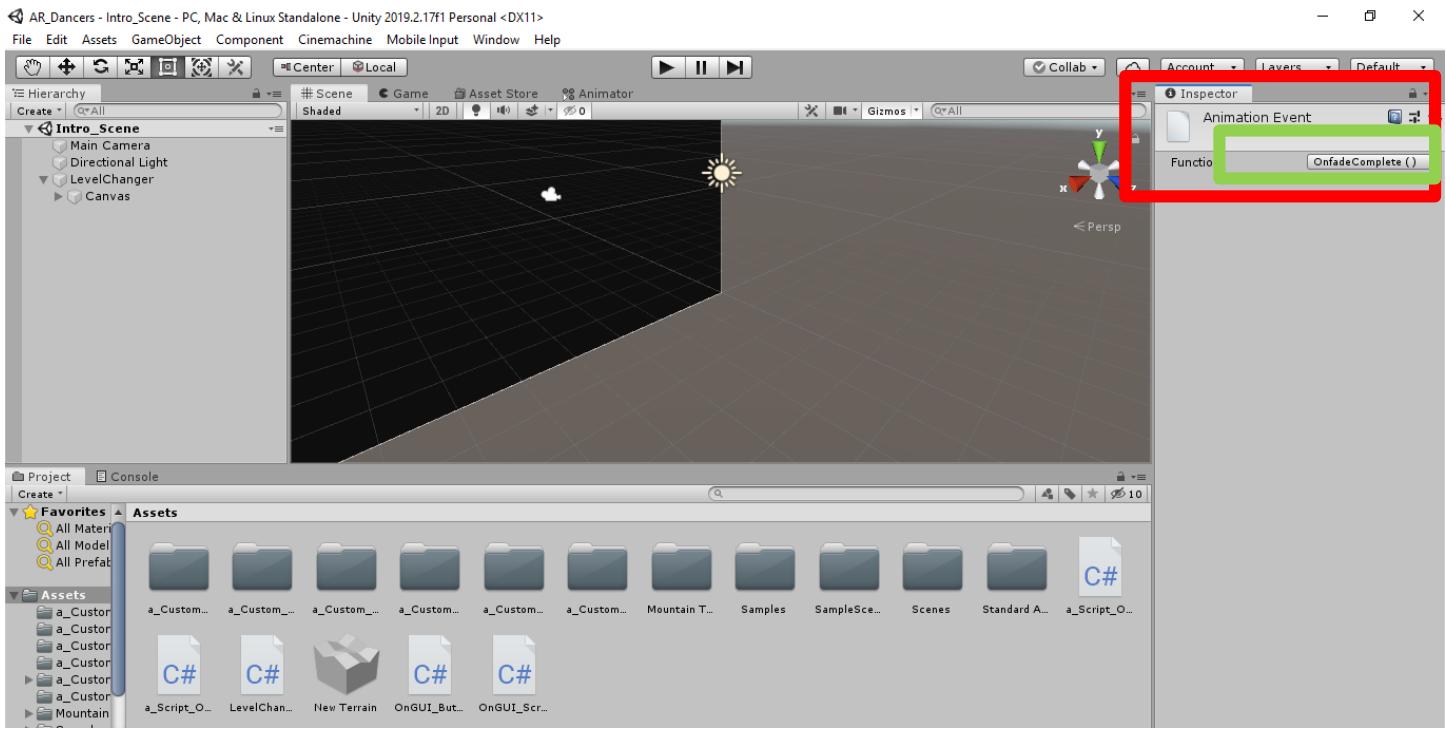


Seen above created a PARAMETER - Trigger for the Animation from FADE\_In to FADE\_Out , named it Trigger\_FadeOut , added this to the Base layer , this can be seen in the Inspector window on the right .



After Right Clicking on the FADE\_In --- select Make Transition .

Click on the TRANSITION down arrow to open up the Transition in the Inspector .



LevelChanger which was a gameObject till now has now been created into a Prefab by dragging and dropping the GameObject into Assets DIR . After its been turned into PREFAB , it can be added as-is into other Scenes , it shall retain its added PARAMETERS and also the Script written to transfer / transition from one Level to the another / transition from a scene to another will work just fine.

The scenes are sharing the assets directory and thus a Prefab created when inside one scene shall work when inside another scene.

## Considering the Size of this PDF Document – am now starting the Chapter-2 as another PDF document

